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YOUR SPECTRUM

No.9 November 85p *Byte High, No Limit*

Inside YS

NEW LOOK SPECTRUM FOR XMAS

Announcement imminent despite Sinclair denials?

SCOOP

DESPITE "official" denials, Sinclair Research looks set to announce an addition to its family of computers — the ZX Spectrum+.

Your Spectrum has uncovered enough data on the soon-to-be-announced device to bring you an exclusive preview.

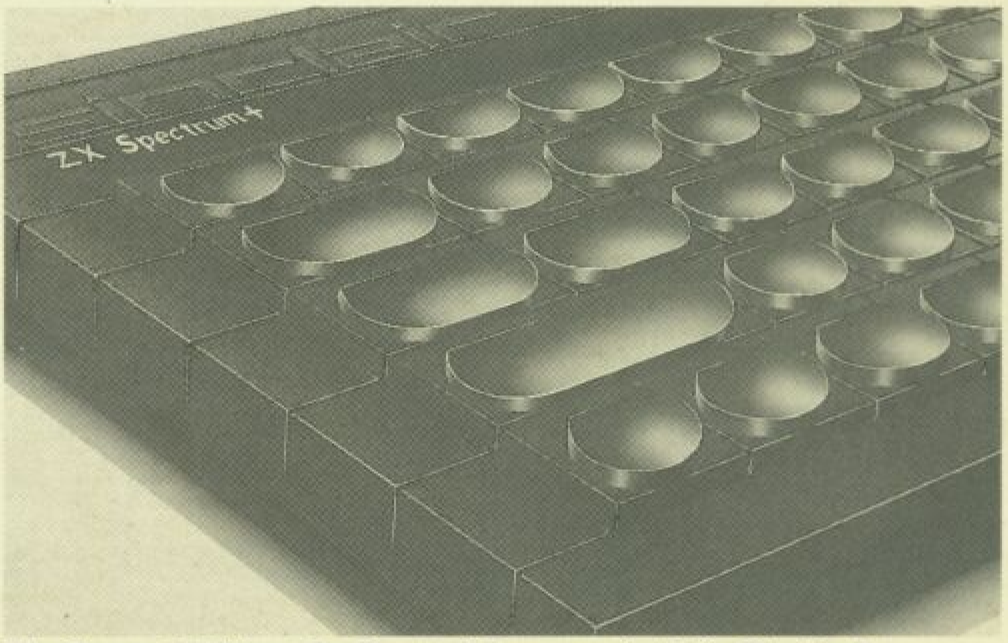
FULL STORY —Page 36

EXCLUSIVE

New micro will be called Spectrum+!

OVER recent weeks, Sinclair has denied all rumours of a new micro in the pipeline.

However, once it seemed information had been leaked, MD Searle was quick to assure *YS* readers that, "the Spectrum, *in whatever form*, will be with us for many years".



The Shape Of Things To Come: A Spectrum in QL's Clothing?

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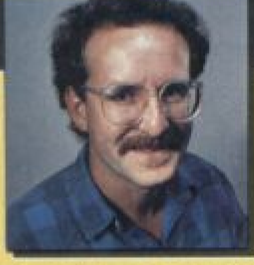
- All 5 Adventures are linked — but you can choose to play them separately. And they all have REAL TIME built in. So if you don't think fast, you wind up as a pterodactyl's lunch, die of over-exertion in a Roman orgy, or just lose your mind...
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- As part of the "Eureka!" pack, you receive a full-colour illustrated booklet, containing cryptic riddles and mysterious illustrations. Using booklet and screen *together*, you steadily unravel the clues and build up a secret phone number piece by piece.
- If you're first to ring it, you save the world and collect the £25,000!
- Quite a package! And to give everyone a fair chance, "Eureka!" will be released simultaneously worldwide on October 31st, 1984. No packs will be available until that date. All orders received by mail or phone by 26th OCTOBER will be despatched by post on the 31st right across the world. So order now, and be one of the first off the mark.

THEN THE RACE IS ON!!!



High quality, full-colour, static and moving graphics

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DEVISED BY IAN LIVINGSTONE

The storylines for "Eureka!" are by Ian Livingstone, whose "Fighting Fantasy" books have sold over 2,000,000 copies. He's dreamed up some rather nasty tricks and twists for you in this Epic, because he has also devised the cryptic clues and conundrums in the booklet that goes with the program. He's the one who knows the answers.

"Eureka!" was programmed by Andromeda teams led by Hungarians Donát Kiss and András Császár. It took the equivalent of 5 YEARS to create, and the skills of 4 graphic artists, 2 musicians and a professor of logic too. We told them to stretch the hardware's capabilities, and make sure you were kept awake for hours!! They've done it...

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When you order "EUREKA!" before 26 OCTOBER 1984, you receive an additional bonus; £7 voucher off the price of the **TROJAN LIGHT PEN** from PSL MARKETING. Normal price is £17.75. You buy it for just £10.75.

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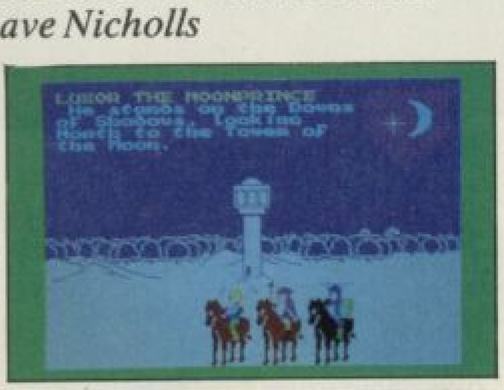
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INSIDE YS

THE NEW SPECTRUM

SOFTWARE





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COMPETITION



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AVALON

For the first time ever there is an all action, 3D adventure game with stunning moving graphics – the unique Avalon.

Only Hewson Consultants could bring you Avalon with its awe inspiring animation. Avalon is the breakthrough that brings adventure to life. In this challenging game you must use your astral projection Morac the Mage to search into the heart of the Isle of Glass and forever banish the Lord of Chaos before he can subject Earth to the Dark Ages for a thousand years. You must explore a three dimensional world with more than 220 separate rooms and over 30 tunnels. On your way you will be challenged by over a hundred animated foes, goblins, wraiths, guardians and evil wizards. Your only protection is the magic of your spells. Avalon, by Steve Turner, is the adventure game of the year, and is available NOW! from your local software stockist. Remember, a world of graphic adventure awaits for only **£7.95**

Other titles for ZX Spectrum

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Fly your Hover Fighter over the 3D Lunar landscape battling the SEIDDAB.
Joystick compatible, 48K only **£7.95**

3D SEIDDAB ATTACK – Steve Turner
Using your radar, missiles and sixth sense clear the city area of SEIDDAB.
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Hunt the Seiddab through four levels of 3D hyperspace and destroy them.
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Find a map hidden in an inhospitable world inhabited by gruesome creatures.
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Retrieve the magnificent Fantasia Diamond and rescue Boris the master spy.
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Steer your car round a tortuous circuit of roads, braking and accelerating as you go.
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20 Best Programs for the ZX Spectrum **£5.95**
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As part of our continuing development of innovative software we are always happy to evaluate software sent to us with a view to publication.

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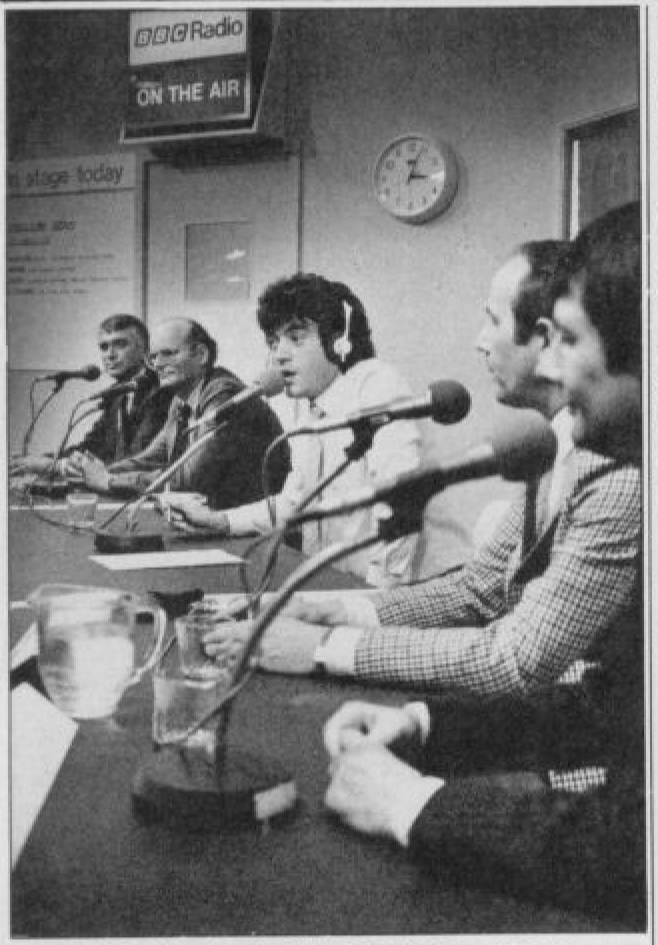
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WHSMITH Rumbelows John Menzies TIGER TRADER spectrum LASKYS Boots HMV

FRONTLINES

DOUBLE CHIPS



The BBC Radio stand at The PCW Show, where Barry Norman broadcast the second edition of The Chip Shop live!

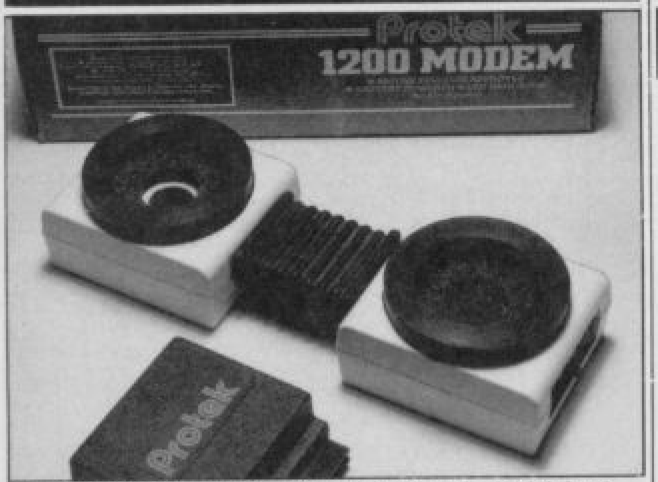
BBC Radio kicks off with a double-helping of computing this Autumn with Barry Norman re-opening *The Chip Shop* on Radio 4 and Radio 1 listeners getting their own computer show with the launch of Radio 1's *Chip Shop* which makes up part of the Saturday morning *Mark Page Show*.

The Radio 1 *Chip Shop* will be broadcast at 7.33 am on Saturday morning, starting on September 29th and will be presented by David Freeman. Free *Basicode* software will be broadcast on Sunday morning at 5.55am and repeated at the same time on Saturdays. You'll need a *Basicode Kit* for this though, costing £3.95 from Broadcasting Support Services, 2 Cater Road, Bristol BS13 7TW.

If you really can't stand the thought of getting up so early on a Saturday morning, you could always tune into *The Chip Shop* on Radio 4 at the slightly more reasonable time of 4.15pm though you won't get the software.

Barry Norman broadcast his second show of the series 'live' from the PCW Show on September 22nd this year.

MODEM TO MODEM



Protek's flexible link modem can be used with just about any old phone ... except the Trimphone.

Protek Computing has released their 1200 Modem recently, providing a computer/telephone link which they claim is four times as fast as any of its competitors.

The modem is compatible with any RS232/243 computer — although driving software is required. The Protek device is battery-powered and completely portable with a flexible acoustic link Good news for those with a fear of the phone is that you don't need to adapt the system at all. The price is a competitive £59.95 and further details are available from Protek Computing on 0506 415353.

NORSE SENSE

Mosaic Publishing has come up with a new fully illustrated text adventure based on the book 'The Saga of Erik the Viking' by Terry Jones of *Monty Python* fame. This package has been programmed by Level 9 Computing and is designed for all ages from eight upwards. Terry Jones himself thinks it's pretty good stuff and says, "It's a real extension of the book, not a re-telling of the story ... playing the game, even I don't know what's going to happen to Erik next".

The Saga of Erik the Viking costs £9.95 and comes with a 20-page booklet including extracts from the original book.



As we announced in the July news of YS, Adventure International have signed up a deal with the Marvel Comics Group, and at last the software is available. The first package is *The Hulk* which should be in your shops right now. If *Spiderman*'s more your type of Superhero, you'll have to wait until November for the release of that one. Both packages retail at £9.95 each.

TRASHMAN ON THE MOVE



Not content with cleaning up the streets in sunny Suburbia, New Generation's hero, Trashman, is off on a plane to de-litter the rest of this mucky planet.

Travel with Trashman takes you to 13 countries around the world collecting a whole host of items apart from the usual rubbish. In Germany, for instance, Trashman has to collect the empties at a beer festival, whereas in Paris he devotes his skills to newly-released frogs outside a café!

TWT is available for the 48K Spectrum and costs a mere £5.95 from 'the usual stockists'. 'Dirty' phone calls should be made to 0225 316924.



If the Microdrives are driving you to delirium, why not take a look at the Wafadrive — an alternative tape-based storage system for the Spectrum. The device used two string/floppy cartridges (called Wafers, would you believe?) which can each store up to 128K; there's also a Centronics and RS232 interface lurking around somewhere as well. Wafers are available at the reasonable price of £3.45 (16K), £3.65 (64K) and £3.95 (128K), and the whole bundle will set you back £129.99. Perhaps the best news is that there's already a range of commercial software available on Wafer. Contact Rotronics on 0494 452757.

RUMBLES



Our sleuth on the software scene,* Ron Smith *reveals the rumours.

Earlier this year the BBC filled its early Saturday evening spot with an American series that was all about the adventures of a computer whizzkid and his machine-projected, holographic friend, known as Automan.

Exciting stuff, eh? Anyway, spotting a good theme for a computer game, Liverpool-based Bug-Byte decided to pursue the idea, and is now working on a Spectrumised version which should be in the shops just before Christmas.

According to B-B boss, John Phillips, the game will begin with an underworld consortium having stolen the design of the program to create and control Automan, which they use to produce an evil facsimile. That, of course, will never do, so it's up to the player to find the imposters' controller and destroy the program — a task which will only be possible after working through the game's two main modules.

The first of these will be a cartoon adventure in which animated characters move around on what John describes as a lifelike display, while carrying a variety of objects and performing an equally varied selection of tasks. Exactly what these objects are, or what dangerous deeds are to be performed, JP isn't saying. Anyway, on to phase two.

This is where it'll all happen, because the imposter's controller will have to be chased through a 3D display of Manhatten skyscrapers to his home base, where there'll be a cartoon showdown as you try to destroy this techno-criminal's computer and black out the imposter Automan. The game — predictably entitled *Automan* — will probably sell for £6.95.

Short of fresh programming talent, Dream Software decided to place one or two discreetly worded advertisements offering heavy-readies, eternal life and super-stardom (but definitely no Porches) to anyone who had written, or was writing, a nifty piece of Spectrum code. Well, quick as lightning — via bush telegraph — came a promising-looking reply. It was from an Australian lady who was working on a program called *Crystal Caverns,* the aim of which is being kept quiet, mainly because finding out what it's all about is part of the game. However, Dream spokesman, Keith Williams, says that the final program will feature a few railway carriages littered about and a ventriloquist's dummy (who just happens to be a prince who's been zapped by a spell some time in the distant past) to help the player through what's claimed to be a very hard game.

The release date hasn't yet been fixed, but it'll probably be some time in November, though a minor miracle could bring this forward a little. The price will be in the traditional £4 to £6 price range.

Mastertronic, the cheap games outfit, say they've had such a good response to two games written previously for some lesser-known micro (the CBM64?) that they're currently converting them to run on the Spectrum. The first is *BMX Racers,* which features the player astride his trusty cycle, passing bushes, lakes, trees, pedestrians, park wardens and so on, as he braves the various jumps and tries to cope with unexpected oil slicks — all in an effort to get along the track as far as possible.

The other game, which sounds less than original, is all about leaving a spaceship and venturing into deep space to rescue a satellite that's floating aimlessly about. Of course, the obligatory aliens are present and these should be either blasted or avoided; blasting them will result in the player scoring more points.

Both games should be available some time in January and will sell for the famous Mastertronics price of £1.99.

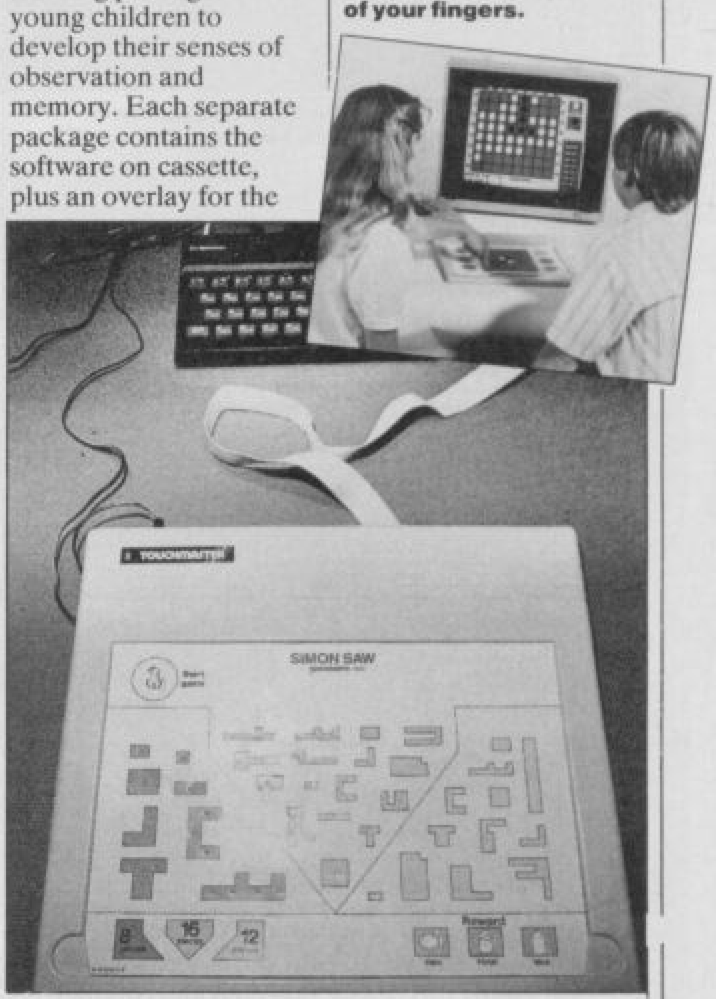
TOUCHING STORY

Designed specifically as a robust and easy to use unit, the Touchmaster is a new graphics pad for the Spectrum. There's a range of software available to suit various applications. The unit is supplied with *Multipaint* - a graphics package that allows you to either doodle or draw complicated designs; specialist modes like 'circle' and 'box' allow you to define the edge points of a shape with a touch of the stylus and the Touchmaster then draws them in for you.

Other packages for the Spectrum version include such diverse things as *Othello, Perilous Castle* (a graphic adventure), *Draughts* and five learning packages for young children to develop their senses of observation and memory. Each separate package contains the software on cassette, plus an overlay for the graphics pad. A useful feature of the pad is that you can use either the stylus provided or your finger, so children don't even need to be able to hold a pen to use it.

The starting package of Touchmaster, power supply, leads and *Multipaint* is priced at £149.95 and the software packages are £9.99 each. If you choose to upgrade your computer (heaven forbid!) then other interfaces are available for many other machines for around £16. Further details on the Touchmaster are available on (0656) 744770.

Get in touch with the Touchmaster graphics tablet — with the stylus provided or the tips of your fingers.



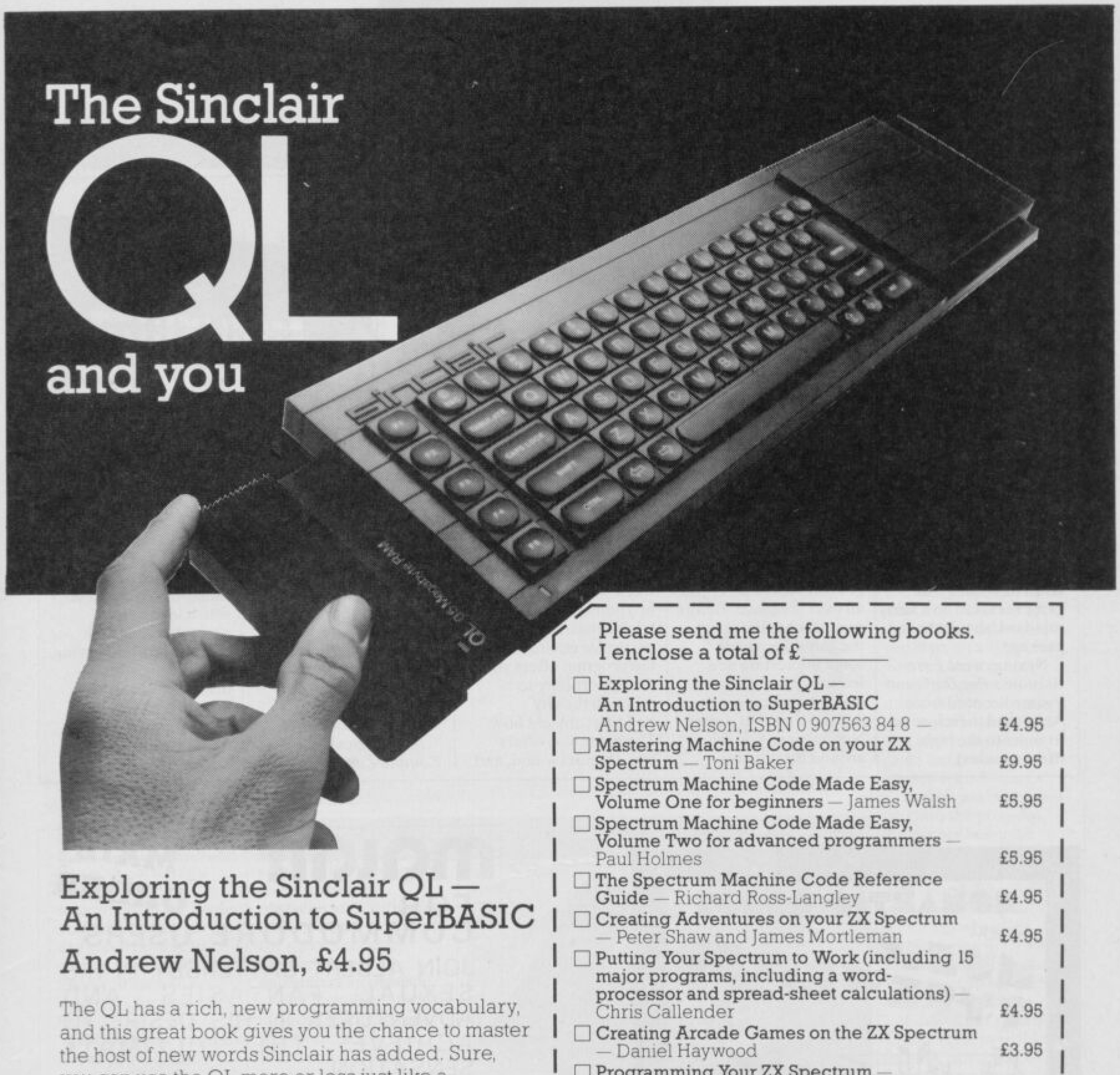
FIRST FORTH ON ROM FOR CURRAH

Currah, manufacturers of the MicroSpeech unit, has announced a new product to be available from them...'soon'.

Called the MicroSource, it allows you to write and use assembler or Forth in Basic lines, which means you can run either added languages on their own or even 'integrate' them into Basic programs.

Looking uncannily like the MicroSpeech, the MicroSource is another one of those flat black boxes. At the time of writing, Currah weren't giving away enough for us to find out whether there would be an expansion port carried through. This was one of the only big criticisms of the MicroSpeech and is probably the reason for the launch of their MicroSlot motherboard.

The MicroSource has a planned release price of £44.50 but more details should be available from Currah by the time you're reading this. If you want the info first hand, give 'em a ring on 0429 72996.



Exploring the Sinclair QL — An Introduction to SuperBASIC

Andrew Nelson, £4.95

The QL has a rich, new programming vocabulary, and this great book gives you the chance to master the host of new words Sinclair has added. Sure, you can use the QL more or less just like a Spectrum, but if you do, you are missing the extraordinary power which lies behind the radical concepts of SuperBASIC. Command by command, statement by statement, Andrew Nelson takes you through the richness of QL SuperBASIC in *Exploring the Sinclair QL — An Introduction to SuperBASIC*. Just £4.95 and available from most book and computer shops. In case of difficulty, you can order it directly from Interface Publications, using the coupon below. (Trade only: Interface Publications are distributed exclusively in the UK and Eire by W H S Distributors. Export orders handled by Interface Publications.)

Interface Publications, Department QYS,
9-11 Kensington High Street, London W8 5NP.

Please send me the following books.
I enclose a total of £______

☐ Exploring the Sinclair QL — An Introduction to SuperBASIC Andrew Nelson, ISBN 0 907563 84 8 —	£4.95
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☐ Spectrum Machine Code Made Easy, Volume One for beginners — James Walsh	£5.95
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QYS

INTERFACE PUBLICATIONS

— We're the experts! —

QUICK OFF THE MARK

You can tell it's getting near Christmas when the software companies start to announce what might be termed their 'Autumn Collection'. So, with its first major product since the Argus Software takeover, Quicksilva has released five new packages for the 48K Spectrum.

The first game for the Spectrum was one we reported in *Rumbles* some months back — a game based on the IPC Comics character Johnny Alpha, currently battling his way through each issue of *2000 AD*. Called *Strontium Dog and The Killing*, the game seems to be a fairly standard 'shoot-em-up' package.

Next up were *Eric Bristow's Pro Darts* and a game licenced from Atari (and therefore no stranger to the high street arcades) *Battlezone*. Not particularly inspiring packages, but again the *Battlezone* game boasts fast line-drawing routines which, it's claimed, keep the quality of the original game.

Of course the show belonged to Sandy White and his co-creator girlfriend Angela Sutherland for their new package *Zombie Zombie*. The game itself does look just a little bit like its predecessor, especially as it makes use of the Softsolid routines developed for *Ant Attack*. Instead of ants though, this time you've got zombies chasing you all over the place. Before you start getting upset, the game does have some interesting new features which help to make it much more than a cash-in on *Ant Attack*. Not only can you fly around the city in a helicopter — a good trick when you're surrounded by zombies — but, once you've mastered one particular environment, the program offers you the opportunity to redesign the city buildings any old how. The game also offers two-channel sound, and if you want to attach a midi-synthesiser (around £1,200 for the one Sandy was using to demonstrate!) there's a circuit diagram for the interface you'll need included on the cassette's insert.

Almost stealing *Zombie Zombie*'s thunder was a program called *Blood and Guts*, which involves the player being shrunk down in size and having to battle the various diseases inside the human body.

All the Quicksilva packages are priced at £6.95.



Tharg, Alien Editor of 2000 AD comic, reviews one of Quicksilva's 'Autumn Collection'.

FROM THE HIP



Troubleshootin' Pete Reporting

Pete's phone lines are open from 10 am-1 pm and 2-5 pm on Wednesdays and Fridays. Ring him on 01-631 1433.

It's been a bit quieter on the phones this month — apart from the endless requests for infinite lives POKEs on every game you can possibly think of! (Remember, for those sort of questions it's best to write into our 'Hacking Away' column.)

On the technical side, John Dorset from Ilford (who's getting to be something of a regular customer) rang to complain that his Microdrive had failed him yet again. After having returned the drive to the shop twice already, he was beginning to think the fault lay elsewhere.

The Interface 1 seemed perfectly OK, so what could it be? A simple process of elimination pointed towards the cable connecting the two and this was indeed where the problem lay. A quick cable swop with the help of the nice man from Menzies and all was well again. Next time your drive and Interface refuse to talk to each other, check that the connecting lines *are* actually connected.

Just to bring home the fact that my knowledge of the Spectrum's ROM is next to useless, one caller rang to ask me whether there was a ROM routine which would print the contents of the BC register. A quick glance through Melbourne House's *The Complete Spectrum ROM Dissasembly* didn't help much, so I told him there wasn't one. Of course, the very next day, while reading Interface's *Delving Deeper into Your ZX Spectrum* by Dilwyn Jones, I found the very routine that I'd said didn't exist! All together now, it's 6683d. Well you *do* learn something new every day.

John See from Margate called in simply to ask whether we knew of a high-resolution colour monitor which didn't need adapting for the Speccy. It's an easy answer; there's only one (unless someone out there knows different — in which case drop me a line), the Cub 1431/MZ monitor from Microvitec on (0274) 390011. The Cub, which Microvitec have kindly loaned to us, is used in all our screen shots — so you can see for yourself the quality of the machine.

Just for a change I end this month with a query of my own. Attention all QL owners, how can you control the line width when listing on the printer?

I need my programs to be 40 characters across and not the 80 I'm getting at the moment.

KIDD'S JUMPING FOR KIDS

Martech joined the 'new product' bandwagon at the PCW Show with the release of *The Official Eddie Kidd Challenge.* The general gist of the program is pretty obvious from the title, but more precise details of it go along the lines of a potted history of Eddie's career.

Kidd apparently started off by jumping oil drums on his pushbike when he was 12 years old and progressed to his world-breaking jump of 190 feet at the age of 18. Basically that's the idea reproduced in the game; you start on a BMX bike jumping barrels and work through various stages of difficulty until you reach your limit. The best jump of the game so far is by Eddie himself with 39 cars.

There's a competition tied into the program, the winner being the player who can get the best score by the closing date — and there have been two closing dates set for the would-be entrants, one in October and the other in January. The prizes up for grabs include a BMX bike.

Eddie Kidd's Jump Challenge is available for the 48K Speccy at £6.95 from Martech at Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE or from all the big high street stockists.

ROBOT CONTROL

If you've got a robot hanging around somewhere in the garden shed just waiting for the day you'll be able to control it with your Speccy, then wait no longer . . . for that day's here.

The Robotek interface allows you to control the motors and servos of your robot so that you can direct the type and duration of movement. Not only that, it should be possible to mount a switch at the front of the robot for sensing obstacles and, with a few lines of Basic, to turn on the robot's reverse motors when it encounters an obstacle.

The Robotek interface is priced at £29.99 post free from Datel Electronics. Unit 8, Fenton Industrial Estate, Dewsbury Road, Fenton, Stoke-on-Trent, or phone up those wise heads at Datel on 0782 273815.



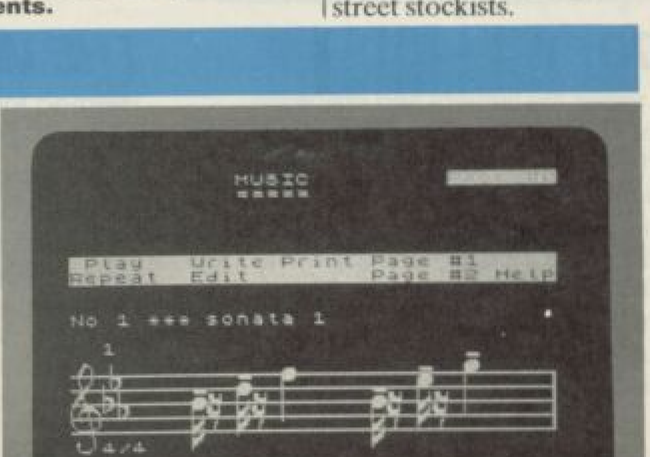
With a Robotek interface you can use the Spectrum to control a robot's movements.

THE FOOD OF LOVE?

Romantic Robot has made available a package called *Music Typewriter.* Priced at £9.95, complete with cardboard overlay for the keyboard, the product is said to be suitable for "music novices with a lot to offer professional musicians".

Designed to get potential musicians writing, playing, editing, printing and storing their symphonies to tape, *Music Typewriter* uses real notation — with graphics appearing simultaneously with sound — and provides the basics of music, such as notation, rhythm, scales and intervals. To give you a chance to get the hang of the package, there are on-screen instructions, error reports and, if you get the whole thing round your neck, 'help' pages. Once you've managed to get composing, there are full editing and transpose facilities.

Keeping up with the keyboard kings of the pop world is still going to be a job and a half — simply because the Spectrum seems incapable of producing a good healthy sound output. But if music's your bag, get in touch with Romantic Robot at 113 Melrose Avenue, London NW2.



HACKING AWAY

Welcome to our regular column for hacker's hints and tips. Poke some fun into your programs and write to
Andrew Pennell, Hacking Away, Your Spectrum, 14 Rathbone Place, London W1P 1DE.

To kick off with this month the irrepressible **Dave Nicholls** has sent in some POKEs for *Sabre Wulf*, along with a couple for other games. For those from Ultimate, you have to duplicate the single line of Basic, as it normally loads as line 0, which is un-editable. Add the POKEs just before the PRINT USR command.

They are: *Lunar Jetman* — for infinite lives, do POKE 36966,224 and POKE 36945,3; *Sabre Wulf* — for infinite lives, do POKE 43575,255 and POKE 45520,255; *Tutankhamun* (never heard of this!) — for infinite lives POKE 27783,0 and to enter on any screen do POKE 34970,63, and then press the ASCII for the screen number + 48; and finally, *Tranz Am* — for, guess what, infinite lives, do POKE 25446,0.

Still on the subject on *Sabre Wulf*, **Gavin Beny** and young **Peter Featherstone** both supplied POKE 44929,0, which disables the baddies in the game, so that they only appear when you press Fire. To get an object after this you've got to stand on it and Fire, though you don't have to actually collect anything to be able to see what happens when you finish!

At a recent ZX Microfair I had the misfortune to be accosted by three lunatics who wished to be known as the **Romford Hacketeers**, who gave details of some more alterations for *Kosmic Kanga*, namely POKE 35136 with the height you wish to jump, and POKE 23994 with the number of lives you want to start with — it allows up to 255 lives, no less. They also told me of an interesting feature of *Cavalon* (by Ocean), whereby if you hold down the complete row of keys starting with QWERT and the row ASDF, etc, all at once, the program says 'Hi Chris, what do you want' and you can then jump to any screen. The best ways of holding these keys down is with two rulers, or several cassette boxes. (I have reason to believe that the real identities of two of these guys are Steve and Daz).

Also at the ZX Microfair I bumped into a chap who told me a long time ago about *JSW* having the remnants of TRS-DOS in it, which I mentioned in a previous article though I neglected to give his name, so under threat of death I must mention **Steve** as the source of the fact.

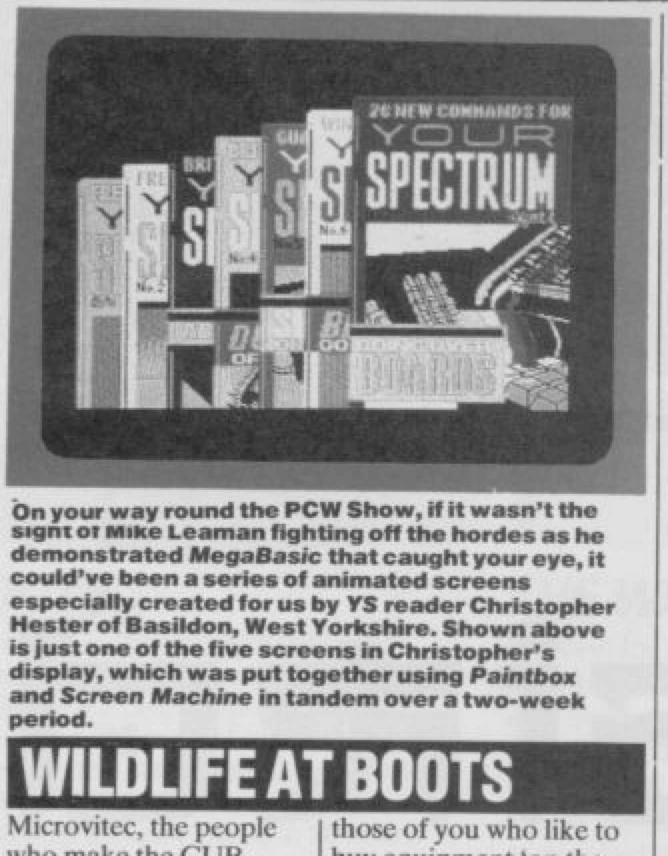
Yet more POKEs have come in for *JSW* — there can't be many left now, surely! Anyway, here goes: **A Wiseman** sent in POKE 37874,0 which makes you collect any object as soon as you enter each room, and POKE 36353,60 which improves your jumping abilities. **M Firby** sent in POKE 36353,44 which makes it much easier to get the object in The Nightmare Room, and **Andy W** (what's with the anonymity Andy?) reveals that POKE 38207,24 removes the dreaded Maria (though you can still see the final effect).

A Wiseman also gave info on two other progs — namely *Wheelie* and *Sabre Wulf*. About *Wheelie* — to get to different levels just press these sequences:

1. ENTER	5. XENON
2. WITTY	6. ZX83B
3. SHARK	7. 2MQL3
4. BEBOD	8. HRME2

Regarding *Sabre Wulf*, he told me that you can work out where the Amulets are by looking at the natives — when they are directly in line vertically or horizontally they turn slowly, go yellow and play a tune. That's the sort of useful fact Ultimate would never put in their very brief instructions.

Next month in response to your letters, I'll be explaining how to go about hacking *Chuckie Egg* (among others) and how to get it going with a joystick. If I've not yet covered a game that you've successfully (or unsuccessfully) hacked into, drop me a line to the *YS* office and tell me about it.



On your way round the PCW Show, if it wasn't the sight of Mike Leaman fighting off the hordes as he demonstrated *MegaBasic* that caught your eye, it could've been a series of animated screens especially created for us by *YS* reader Christopher Hester of Basildon, West Yorkshire. Shown above is just one of the five screens in Christopher's display, which was put together using *Paintbox* and *Screen Machine* in tandem over a two-week period.

WILDLIFE AT BOOTS

Microvitec, the people who make the CUB monitor (the one *YS* uses for its screen shots) has just announced that Boots, that great high street institution, are going to stock two of their monitors, including one for the Spectrum.

It's good news for those of you who like to buy equipment 'on the spot'. After that thumbs up, Microvitec get a thumbs down for having three live tiger cubs on their stand at the recent PCW Show; they didn't take too kindly to the noise, crowds and the heat.

ANIROG DELETE SPECTRUM

In one fell stroke Anirog software have deleted all but one of their Spectrum titles and are going to start concentrating on Amstrad and MSX titles.

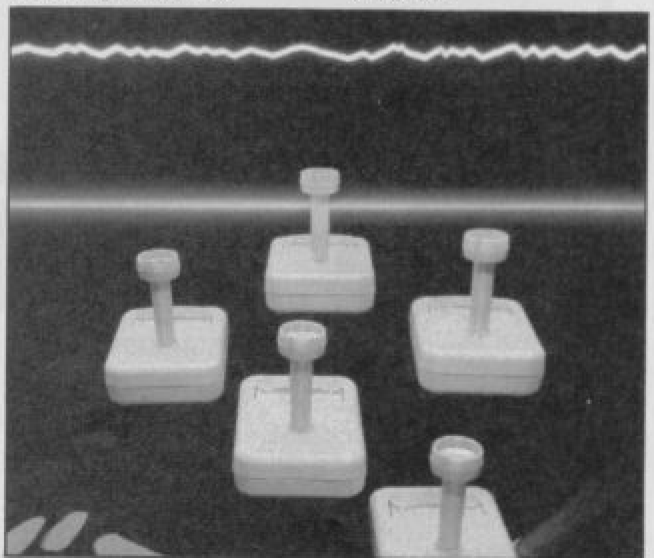
A spokesperson on their stand at the PCW Show said that because of the immense competition in the Spectrum software market they only want to keep their one strong Spectrum title going, *Specgraf*.

The company is looking to establish itself as major competition for Amsoft in the Amstrad market and, among other imaginary pastimes, also want to make a big hit in the MSX scene. If you reckon you're going to miss the software, contact Anirog on 0322 92513.

JUNIOR JOYSTICK

Kempston Micro Electronics, the 'interface-anything' people, has designed a new style of joystick for the infant computer-user. Called the Junior Pro Joystick, it's moulded in bright red and has been released only after extensive market tests.

With a pocket-money price tag of £5.99, Kempston believe it will be a firm favourite for Christmas. They're also doing a package deal of a Junior and a Kempston 5000 Pro Joystick for a total of £14.99. If you're in the market for a Junior or just feeling childish then pop along to your local computer shop or phone Kempston on 0234 856633.

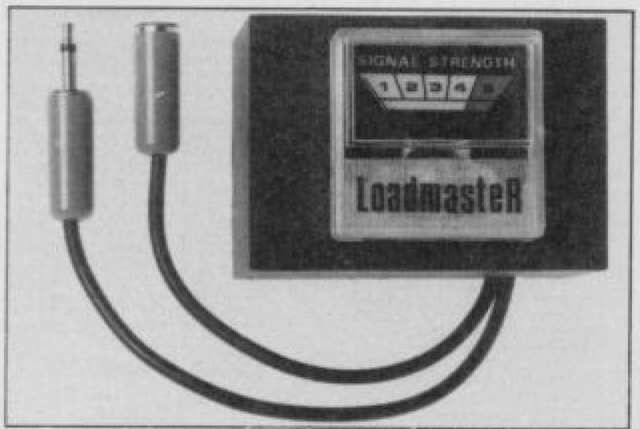


Specially designed for younger user, Kempston's Junior Pro Joystick comes at the pocket-money price of £5.99.

A LOAD OFF YOUR MIND

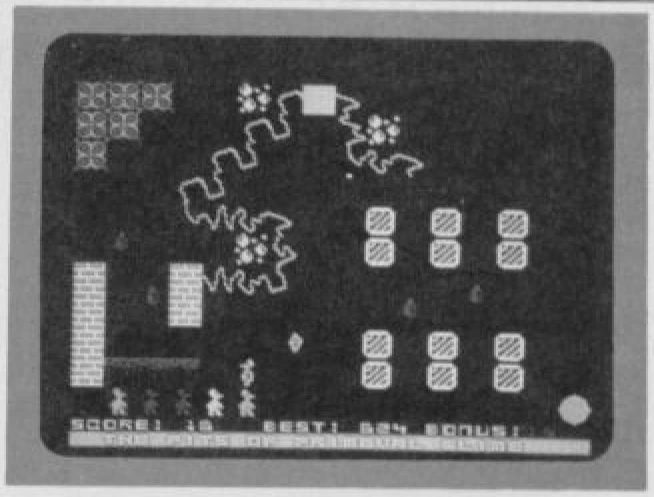
How many times do you reckon you've waited for a tape to finish running, only to find that the program hasn't loaded properly? Next comes the check — are the leads plugged in OK? Then, blast it, you find the volume isn't set correctly, and all because you were playing your favourite *Motorhead* tape the night before!

Well, the Loadmaster Volume Indicator from Probemaster might just sort you out. You simply plug the EAR lead from the computer into the Loadmaster socket, then plug the Loadmaster plug into the EAR socket of the recorder. The Loadmaster now indicates the level being fed into the computer on its meter — the needle undulating as it follows the train of pulses.



Check out your loading levels *before* you get a loading error using the Spectrum Loadmaster.

The whole package will cost you £11.49 — which is a whole lot more expensive than checking the volume control before you start loading . . . but it's certainly more accurate. Queries should be directed to Probemaster Ltd, 23 Ridgeway, Cuffley, Herts EN6 4BB.



Character names seem to be of rising importance in software product identification at the moment, right through from Horace to Willy. Well, Monty seems to be the current vogue right now, for as well as Gremlin Graphic's *Monty Mole* Artic Computing has released a new game called *Mutant Monty*. Featuring the now standard 40 rooms, Monty has to rescue the 'damsel in distress' *(What another one! Ed.)* from various meanies like the dreaded Parellanians and the Quantum Leapies. It's all played against the clock and you have just five lives to fight your way through the Pit Of Eternal Slime, the inside of a neutron accelerator and cross the desolate wastes of Pithor. Priced at £5.95, it should be in the shops soon.

CONCURRENT AFFAIRS

Our man at the PCW Show, John Torofex, got out and about to check out the rumours of the moment — here's his report . . .

At long last, it looks as though the QL backlog may have been sorted out. The hard evidence comes in the form of Sinclair Research minions distrubuting QLs to any lucky punters who happened to be strolling around the PCW Show with £399 in their hot and sweaty hands.

I even saw one disgruntled owner wheeling a faulty machine up to the stand to have it replaced with a shiny new one in seconds — there was only a brief altercation between the parties, but I'm sure the publicity wouldn't have done Sinclair Research much good, especially at its first real opportunity to *sell* the machines. I never found out what happened to the punter I saw wearing the 'I've already had two broken QLs' badge though . . .

LISTING THROUGH

If you're feeling LISPless, not to worry — the word is that LISP, the list-processing language frowned upon by the Artificial Intelligence fraternity, has been implemented on the QL. And who should take on this great task? None other than the programmer who developed it for the BBC Micro.

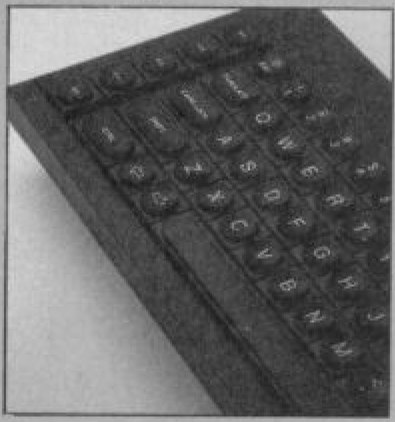
THE FINAL WORD?

Version 'JM' of the QL firmware ('JM' standing for its programmer, John Mathesson, by the way), which is intended to be the final version, appears to have a brand new bug which never troubled the 'AH' version (the one that preceded it, for all you QL watchers). Someone I know who wrote a 68000 assembler in SuperBasic on his 'AH' machine was more that put out to find the program wouldn't run on the latest version.

Chatting to the staff down on the Sinclair Research stand, the aggrieved programmer was first informed that his program was faulty and then — once he'd demonstrated it on an 'AH' machine — was told by David Karlin that he'd be "looking into it". Watch this space for developments.

RUNNING AMOK

Although rumours are emerging that Sinclair Research QL software duplication is done by a number of people running between machines , there's talk of a new wonder-machine being used for this purpose. This specially designed microcomputer-controlled



duplication system will be able to copy many more cartridges at a time from a master cartridge. But don't worry too much about the people it's replacing — apparently, someone still has to put the blank cartridges in and take the loaded ones out . . . the miracle of modern science!

IN GOOD COMPANY

Getting on to some of the other companies caught up in the affairs of the QL, OE Ltd is developing a professional quality modem. Using a single chip, the modem will connect the single baud rate serial port of the QL to the 1200/75 baud rate necessary for Prestel and generate the requisite Prestel frequencies. The device is expected to be able to auto-dial and auto-answer, and includes some very sophisticated software. I wouldn't expect too much change from £200 though.

There's also some news on the software front as well . . . from Computer One of Cambridge. It's just announced an editor/assembler package (partly written in SuperBasic) and a Pascal compiler; Forth is on its way, as is a touch-typing program. Prices are said to be in the £20-30 range. You'll also find an editor/assembler from Metacomco — this one's priced at £59.

68K/OS, an alternative to QDOS, is now available from GST for just under £100. The software is in EPROM and plugs into the expansion port. A switch is provided so that you can select either QDOS or 68K/OS.

In last month's QL Affairs Leon Heller suggested that you could get 8-pin DIN plugs to connect up your RGB colour monitor from Maplin Electronic Supplies Ltd. Well I'm afraid they're the wrong ones. Instead try Videk Ltd, Videk House, 26 Queensbury Station Parade, Edgeware, Middlesex. The connectors are only 40p.

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FORUM

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THE LUCK OF THE DRAW

I've had a bit of bad experience with a Trojan Light Pen, and I think some of your readers could benefit from my problems.

I purchased the device at the Alexandra Palace ZX Microfair early this year after seeing an impressive demonstration at the Trojan stand. I tried it as soon as I got home and, after loading successfully, tried to use the commands as shown in the instruction sheet. I couldn't get the screen instructions to work at all and, when I eventually managed to get to the Hi-res screen, positioning the pen over the letters on-screen gave no response whatsoever.

I gave the device to one of the brightest hackers we have in the sixth form at the school where I teach and, although he had more success than myself, reported that he wasn't impressed, especially with the DRAW command.

Eventually, I decided to return the device to Trojan, who made no apology for my lack of success, quoting their experience of a 12-year old girl who managed to make it work within 30 minutes. Having recently bought a new TV with a higher resolution, I settled down to try again — and this time found that I could get further. But still, the flickering cursor meant that my drawings were far from accurate.

I doubt if Trojan will take much notice of further complaints from me, but I would be interested to hear how other readers have fared with the device. I would also recommend that other potential purchasers should check out the Light Pen on a TV similar to the one they own before they part with their money.

A Brown, Leighton Buzzard

MANAGING MICRODRIVES

Having recently become the proud owner of a Microdrive, I though I'd let you in on some of my recent findings. On the subject of converting programs to run on the Microdrive, my first attempt was to buy and use *Trans Express* — a beautiful piece of software (and definitely worth having), but it does have its limitations — my success rate at getting programs on cartridge range from five to 20 per cent ... and I still couldn't get my favourite series of programs (the Level 9 adventures) to work with those cunning cartridges.

My next step was to buy the *Lerm MD1.* After getting over the shock of having to read the instruction manual, success started to come my way — so far 100 per cent success. Level 9's *Colossal Caves* now loads off cartridge in 53 seconds (from power-up to first screen). So my advice is, before you buy *Trans Express,* check out *Lerm MD1.*

I also found that my cartridges tended to 'go walkies' in the general mess around my Spectrum. So I took a quick trip into WH Smith's, bought a *Mini Index Box,* threw away the cards and, hey presto — ten cartridges fit perfectly.

Jon McNamara, Bishop's Stortford

HOBBIT HACKERS

I have set up a Hobbit Appreciation Society to exchange hints, tips, interesting happenings, etc, with its members. Membership is free as is the monthly newsletter. Could all correspondence also include an SAE for prompt reply; members should also include as many SAEs as they want newsletters.

I look forward to hearing from you.

Nigel Foster, The Hobbit Appreciation Society, 12 Middlefield Lane, Hinckley, Leics LE10 0RB

KATAPROBLEMS

Help! I typed in your program *Krazy Katapilla* from issue 5 of *Your Spectrum,* but when I RUN it, all I get is 'E: OUT OF DATA, 2550:1'. Where have I gone wrong, I checked my typing and still can't find the problem, please can you explain?

Tom Jenkins, Heaton, Newcastle-Upon-Tyne

There have been a number of calls on the Helpline enquiring about Krazy Katapilla. *There's nothing wrong with the listing in the magazine — as it was checked. But we do appreciate that it's very easy to miss out something or make a simple typing error, particularly in the huge data sections of the program. Your problem sounds as though you have missed out a comma, or a number in the last block of data. Re-check this and you'll probably find the cause. Troubleshootin' Pete.*

MIS-TIMED?

Should Ian Beardsmore buy himself a new watch? Having read his *Crash Theory* (issues 5 and 7) in which he stated that the 64000 display didn't NEW itself for at least half an hour, I decided to check! After entering the CLEAR, the POKE, line 110 and RUN, I started timing; 29 minutes and nine seconds later I was rewarded with my Speccy NEWing itself. So how many minutes are there in Ian's half hour?

Incidentally, while PEEKing around after the NEW, I discovered that the '66' POKEd into 64001 had not been protected by the CLEAR statement as it would with a normal NEW, having been replaced by a zero. Can anyone suggest why?

Patrick Fox, Birmingham

I think you're being a little unfair about Ian's half hour, 29 minutes and nine seconds is near enough half an hour isn't it? As for your last question, the Spectrum doesn't do a normal NEW, it performs a System Reset, which has the same effect as pulling the plug out and then replacing it. Troubleshootin' Pete.

BIGGER'S NOT ALWAYS BETTER

With reference to the article in your September issue discussing the latest model of the Spectrum, I feel I should warn all potential (and current) games designers in your readership of a possible programming difficulty with the new issue 3, mark 5.

As Simon Goodwin mentions, previous versions of the 48K Spectrum have had their memory in two separate blocks of 16K and 32K. But, as explained in my books, *Supercharge Your Spectrum* and *Advanced Spectrum Machine Language,* machine code placed in the lower 16K of the Spectrum RAM runs about 20 per cent slower than code placed in the top 32K bank. Briefly, this is due to the fact that the ULA needs to access the lower 16K to produce the TV display, whereas it leaves the other eight chips containing the top 32K alone.

Now, according to Mr Goodwin, the new machine contains both sections of memory in eight 64K chips and I think this will result in machine code running at the same lower speed — wherever it's placed in RAM. Many programmers, including myself, have in the past taken advantage of the higher speed of the top 32K — so now you know why *Manic Miner* and *Jet Set Willy* start at 32768! — and may find that their games do not run quite as fast as they used to!

Another consequence of the new issue will probably be that previously 'pure' sound effects ('whoopees' and laser blasts) will sound 'rough' due to the ULA, which just won't stop interrupting.

I must stress that at the time of writing I have not been able to obtain a '3.5' Spectrum to confirm this and would therefore be very interested to hear from anyone who has.

David Webb, Woking

CENTRONICS CONFUSION

I'm afraid there's a slight error in the text for the article *Softening Up The Hardware* in issue 6 of *Your Spectrum.* The error was the port address assigned to the Centronics port — the diagrams were correct but the words weren't. The text said that the port address was 'DF' (that's 223 in decimal) whereas it was, in fact, '3F', which is 63 in decimal.

John Flenley, Waterlooville

Sorry about that, folks — but these things do happen. Hopefully, though, it's not too bad to correct — just alter the lines 01040, 01100 and 01260 so that the value in brackets is '63' and not '223'. Any queries you may have on the DIY Centronics article please send to John, c/o Your Spectrum, 14 Rathbone Place, London W1P 1DE and we'll pass them on to him. Ed.

HOT GOSSIP

Thanks for Steven Stratford's excellent *Chip Chat* speechcode programs (*YS* issue 7) which appeared in *Program Power.* Unfortunately, there's an error which crept in somehow that

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can be correctted in one of two ways.

Either change the '11984' in line 30 of the Hex loader to 12067 and enter the data as shown, or enter the Hex loader with 11987 (but on data statement 65180, there shouldn't be an '80', only three zeros). Thus, line 65180 should read:

```
65180! 225 201,0,0,0
```

I found the second method to be best, but both work well.
A Husain, Ramsgate

MICKROSZAMITOG-EP — WHO HE?

While on holiday in Hungary, I came across a magazine called *Mickroszamitogep Magazin* (Micro-Computer Magazine). (*Hey, why didn't we get a snazzy title like that. Ed.*) It has advertisements for various home-grown office computers (including an IBM-compatible!) and educational machines. There are technical articles on subjects such as 'The inner workings of a Basic interpreter', 'APL', and some complex 3D graphics.

A *secondhand* Spectrum there costs around £500, but the magazine gives a detailed review of Psion's *Vu-Calc* as well as several listings for the ZX81 — so there must be a few rich people around in Hungary.

There's also a lot of eductional computing material in it, including a major article about computers in maths teaching. The magazine itself costs only 40p for 48 pages — and it's really packed with computing material.

You'll be pleased to hear that it's not by any means on a par with *YS*, especially when read through an interpreter (my father).
Johnathan Frank, Birmingham

PALS OF PASCAL

I recently bought a copy of Hisoft's excellent *Pascal Compiler* for the 48K Spectrum and the increase in speed over ZX Basic is pretty difficult to believe. It's obviously not as fast as assembly language, but have you ever tried to assemble SIN(X/PI*2)+COS(Y)?

The biggest problem I've experienced is a lack of published programs in Pascal. With this in mind I am thinking of starting a Spectrum Pascal Users Group for exchange of programs, procedures and answers to problems. If any of your readers are interested in this idea, they should contact me (especially if they can help in the organisation of such a project).
Frank Hollis, 92 Little Pynchons, Harlow, Essex CM18 7DE

PARANOID POKER

Well, that's really brilliant, isn't it!! OK, I accept your excuses about not giving your poor humble readers those luscious juicy POKEs for *JSW* but then, having at last printed all the info, you do it again! AARRGHH!

I dip my snout into your *Cry of the Wulf* article, only to find ol' Dave Nicholls overjoying himself about the fact that he's found the infinite lives POKE, etc. But do we get to know it? NO!

Ooo, you make me *SEETHE*, you do!

I'm not talking to my issue till it repents and gives me that POKE!
Thomas 'Erauqs' Smith, Lewisham

CODING CORRECTIONS

Nice to see that you've got around to publishing your first 100 per cent machine code game — trouble is, some of your readers might not have noticed that you've transposed two of the lines in the listing — and because you've included such an efficient checksum in the loader, they won't notice until it's too late!

On page 78 (*Program Power*, issue 8 of *YS*), you'll see the line numbers on the Hex listing start with the number 25000. Now look down to line 25184. The next line that should be input is line 25192 — the two lines 25360 and 25368 should be input after line 25352 in the next column after line 25352.

Apart from that, thanks a lot for a great game!
Daniel Mills, Hartlepool

PENNING THE QUILL

I've just read the article about *The Quill* which, although being very good, has four points that I may be able to clarify for other readers.

Firstly, setting up a maze. The way I do this is to have four or five rooms allocated to the maze. Each room has a number so that you can exit from 'room 1' and return to 'room 1', and you can have exits from each room in all directions, ie, North, South, West and so on.

The way out of the maze is a little more difficult; I find it best to structure the

exits/entrances so that going N, S, E and W from any location, for instance, exits the maze. You can, of course, even have a letter for your exit code, eg, D, E, W, and then use the letter in a 'help' message.

To make a creature follow your character, you can type:

```
AT 10. ZERO 11. PRESENT 12. SET 14.
LET 5-4
```

as the first entry in status table, followed by:

```
ZERO 11. NOTZERO 13. ABSENT 12.
CREATE 12. MESSAGE "The Rat
followed me"
```

as the second entry in status table. Finally, enter:

```
PRESENT 12. ZERO 5. CHANGE 25.
MESSAGE "The Rat is tearing at my
jugular". SET 18
```

as third entry in status table. SET 18 refers to another entry in the status table which causes a score turn end.

One thing that you didn't mention in the review was how to use BRIGHT and FLASH.

```
E MODE Cap Shift 9 (FLASH on)
E MODE Cap Shift 8 (FLASH off)
E MODE 9 (BRIGHT on)
E MODE 8 (BRIGHT off)
```

I'm not sure just what you mean by 'if A is true or if B is true then move an object from one location to another', but if you have to collect a certain item to complete an adventure, a good way is to 'hide' the object and then create it at a location that would have already been discounted, as in do something in location 100 which would create a 'gun' in location 5. You could do it by entering the following in the event table:

```
PRESENT 14. MESSAGE "THAT MADE
AN IMPRESSION!". PAUSE 50.
MESSAGE "BUT I DON'T SEEM TO BE
GETTING ANY FURTHER".
DESTROY 14. GOTO 5. CREATE 15.
GOTO 100.
```

Tony Bryne, Bolton, Lancashire

HERE WE GO AGAIN . . .

I though I'd write to you and point out some interesting things you seem to have missed in your articles on *Jet Set Willy*.

Firstly, it was suggested that you need to get the invisible object in the First Landing. You don't. The invisible object, which is actually lodged in the wall, is almost certainly another bug in the program. I've heard that you can reach it by jumping off the 39th step of the ladder (could this be a tie-in with the famous book *The 39 Steps?*) but I've not managed to get the blasted thing yet! Perhaps someone out there has managed it?

You're right in thinking that the room called Nomen Luni is a take-off of Imagine's *Zzoom* game — in Latin, *Nomen Lundi* can be roughly translated as 'The name of the Game', Imagine's old catchline. But there's more to this than meets the eye. If you look at the central graphics blocks in this room, you wouldn't be blamed for thinking they gave the impression of the tail end of an aircraft. Now look at the room below (Under The Roof) — can you make out what could be the front end of the plane? Hey presto . . . the joke is that a plane, probably from Imagine's *Zzoom* has crashed into the top of Willy's mansion.

I do admit to being one of those poor souls who, having read the *Jet Set Loony* letter in issue 7's Forum, waited six hours for the raft to appear. Well, I thought it was a joke at the time, but you can never be too sure. You also made a bit of a mess of your WRITETYPER chart by saying that Nomen Luni, The Wine Cellar, The Watch Tower and The Tool Shed can be reached using this method — they can't! You're forgiven this time, but consider your knuckles rapped.

Oh, by the way, my Speccy *does* prefer your Top 20 chart!

David Bailey, Mosley, Birmingham

FAIR ENOUGH?

I just thought I'd write to say thanks for all the programming tips I managed to eke out of Troubleshootin' Pete at the last ZX Microfair back in early September. Unfortunately I didn't have enough money on me at the time to buy one of your T-shirts . . . but if you could tell me when the next fair is being held, I'll be there, cash in hand.

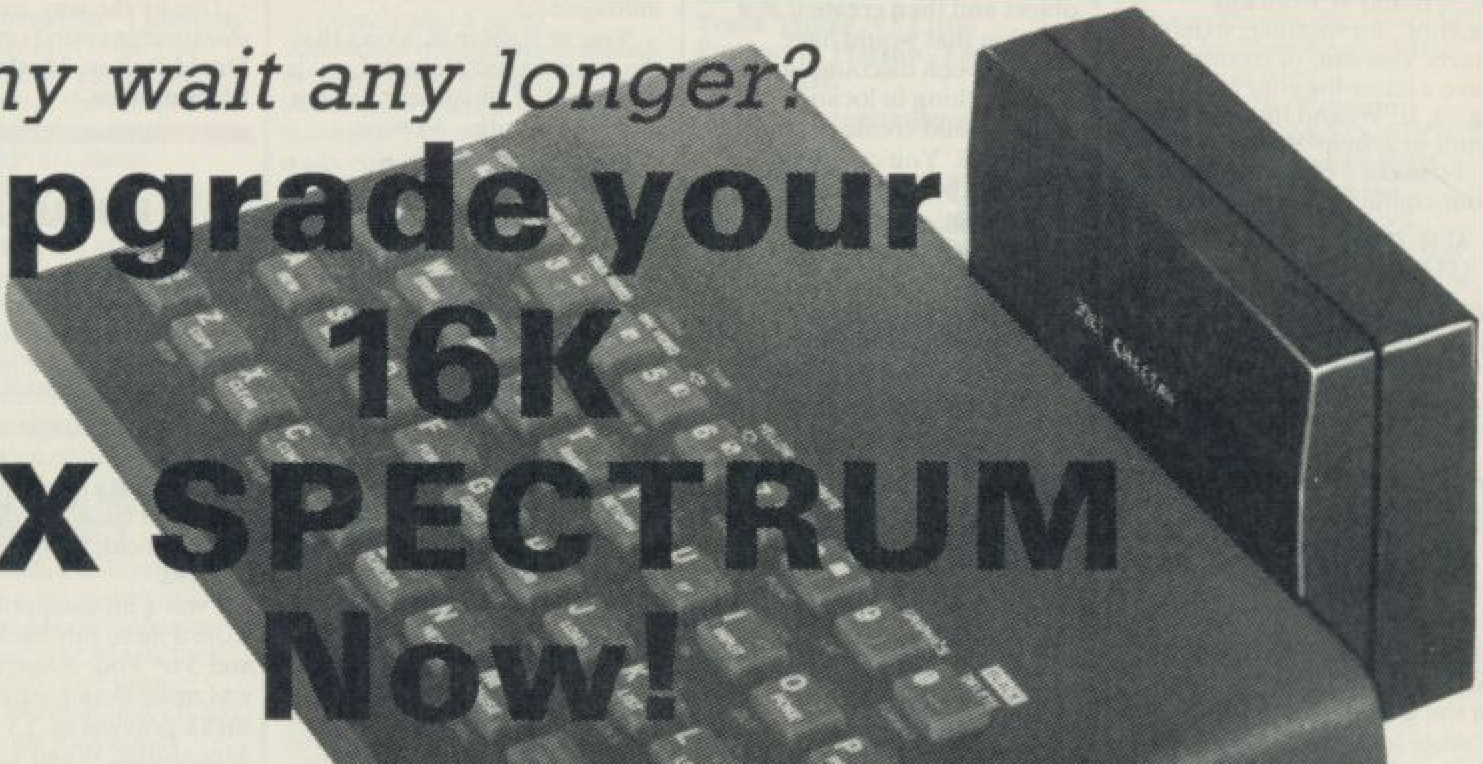
I was a bit disappointed not to be able to buy back issues 2 and 3 of *Your Spectrum*, but was more than pleased to get a sneak preview of *YS MegaBasic*. When's it going to be available?

Stuart Cooper, Andover

Well, to kick off, we'll certainly be making an appearance at the next ZX Microfair — and that's being held at Alexandra Palace on 17-18th November. YS MegaBasic, *for all Mike's last-minute additions, is now finished — all we've got to sort out now is the manual to go with it. Ed.* YS

Why wait any longer?

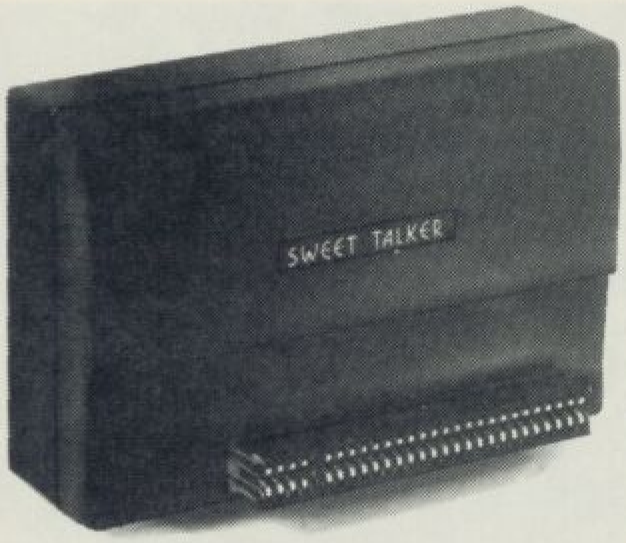
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THE YS TOP 20

View the fruits of your labours in this the November chart. This month's software prizewinner is S E Roberts of Grantham in Lincs. Three software packages are now winging their way north, courtesy of the Post Office.

Don't forget that you can send in your votes every month, but if you don't like mutilating your magazine, a photocopy will do just as well. Fill in those Turkeys as well, December is fast approaching and we're going to have Turkeys for Christmas. (*Who doesn't. Ed!*)

Post your entries to YS Charts, Your Spectrum, 14 Rathbone Place, London W1P 1DE.

YS TOP 20 READER POLL

My top five raves on the Speccy are:

1 ______
2 ______
3 ______
4 ______
5 ______

My three top turkeys for the Speccy are:

1 ______
2 ______
3 ______

Name ______

Address ______

______

______

______

Postcode ______

I understand that when this chart was tested — eight out of ten owners said their Spectrums preferred it. (*What? Ed.*)

YS TOP TWENTY
YOUR SPECTRUM
14 RATHBONE PLACE
LONDON W1P 1DE

YS TOP TWENTY CHART

THIS MONTH	LAST MONTH	MONTHS IN CHART		
1	1	3	**SABRE WULF** ULTIMATE	"YES! I'VE CRACKED IT — THE BEST GAME AT THE MOMENT". **G M & C G SMITH, LOUGHTON.**
2	2	6	**JET SET WILLY** SOFTWARE PROJECTS	MINER WILLY IS MAKING SURE NO-ONE CAN KNOCK HIM OFF THE NUMBER TWO SLOT.
3	5	5	**LUNAR JETMAN** ULTIMATE	MOON MADNESS ON THE FROZEN WASTES IS RALLYING ONCE AGAIN.
4	19	5	**TRASHMAN** NEW GENERATION SOFTWARE	JUST WHEN YOU THOUGHT THE DUSTMAN HAD HAD HIS DAY.
5	7	6	**MANIC MINER** SOFTWARE PROJECTS	GOOD GAMES NEVER DIE. THEY JUST HANG AROUND THE CHARTS.
6	3	6	**ATIC ATAC** ULTIMATE	IT LOOKS LIKE THE SPOOKS HAVE ALREADY REACHED THEIR PEAK AND ARE ON THE WAY DOWN.
7	10	5	**FIGHTER PILOT** DIGITAL INTEGRATION	YOU DON'T NEED A PILOT'S LICENCE TO FLY AROUND THIS GAME — JUST NERVES OF STEEL.
8	NEW	1	**ANT ATTACK** QUICKSILVA	WHERE DID THIS OLDIE SPRING FROM? YES, IT'S ANT-ICS IN ANT-ESCHER AGAIN.
9	6	6	**CHUCKIE EGG** A & F SOFTWARE	FARMYARD FROLICS WITH FARMER GILES IS LOSING ITS GRIP WITH THE VOTERS.
10	NEW	1	**THE HOBBIT** MELBOURNE HOUSE	THIS FAVOURITE SPECCY ADVENTURE IS GAINING IN POPULARITY ONCE MORE.
11	13	3	**LORDS OF MIDNIGHT** BEYOND	THE 32,000 POSSIBLE SCREENS OF THIS UNUSUAL ADVENTURE MAKE IT A SURE-FIRE HIT.
12	14	5	**WHEELIE** MICROSPHERE	RACING DOUBLE-DECKER BUSES AND MANIC HEDGEHOGS IS STILL A POPULAR PASTIME.
13	15	3	**MUGSY** MELBOURNE HOUSE	HAVE 'DA BOYS' BEEN PUTTING THE PRESSURE ON YOU TO VOTE FOR THIS ONE?
14	NEW	1	**MATCHPOINT** SINCLAIR	RELIVE THE PLEASURES OF WIMBLEDON WITHOUT THE STRAWBERRIES AND CREAM.
15	8	6	**SCUBA DIVE** DURELL SOFTWARE	THIS ONE'S SINKING SLOWLY INTO THE MURKY DEPTHS OF THE CHARTS.
16	18	3	**WORLD CUP** ARTIC COMPUTING	AS THE FOOTBALL SEASON COMES INTO ITS OWN, SO DOES THE THRILL OF THIS GAME.
17	NEW	1	**JET PACK** ULTIMATE	BUILD A SPACESHIP THEN TREK THE GALAXY IN SEARCH OF TREASURE.
18	NEW	1	**FULL THROTTLE** MICROMEGA	A NEW MEANING TO GETTING ON YOUR BIKE. TRY AND BEAT THE OTHER BIKERS IN THIS FAST AND FURIOUS RACE.
19	11	6	**CHEQUERED FLAG** PSION	YOU MAY BE STILL TRYING TO BEAT THE CLOCK, BUT THIS RACING GAME'S JUST TRYING TO HANG ON IN THE CHARTS.
20	NEW	1	**KOSMIC KANGA** MICROMANIA	WELL COBBER, YOU'VE GOT TO HELP KANGA FIND HIS SPACESHIP SO HE CAN RETURN TO HIS PLANET.

JOHN HALLET



PROGRAMMABLE INTERFACE

As the first fully hardware programmed joystick interface, this product has become well established over the past year and will accept ALL standard joysticks or trackballs, including Quickshot II with 'rapid fire', for use with ALL Spectrum or ZX81 software — not just those with a joystick option.

* No Software programming required.
* Programming is *not* lost when power is disconnected between games.
* Eight way movement — with or without the fire button pressed — only requires setting of the four normal directions.
* Compatibility is guaranteed with ALL key reading techniques — machine code or BASIC.
* Several interfaces can be separately programmed and fitted to one computer for multiple player games.

Keyboard operation is totally unaffected by this interface, as with all AGF add-ons, and will never conflict with *any* other device fitted at the same time.

Twelve months guarantee, key programming information and a pack of Quick Reference Cards, to speed up setting of the clips, are supplied with full instructions.

INTERFACE II

The AGF Interface II represents the best low cost introduction to joystick control.

The 'AGF' control standard is now offered by over 100 games or utility programs for use with any joystick or trackball.

Any game which is controlled by the cursor movement keys (5,6,7,8) or has a Protek option is also compatible with Interface II.

A rear connector allows other peripherals to be connected at the same time.

This product is available for either the Spectrum or ZX81, is supplied with full instructions, a 12 month guarantee, and a 12½% discount voucher against further AGF mail-order purchases.

ROMSLOT

The new AGF RomSlot is designed for anyone who already owns a programmable joystick interface, or prefers to use the keyboard to control games, and would like to add the facility of ROM cartridge software to their system.

RomSlot will accept the Sinclair range of instant loading games and will also be compatible with the new releases from Parker Software — exciting new games only to be available in ROM format.

This system allows instant play. Your computer memory size is not important and you will be able to play games that could ordinarily require more RAM.

RomSlot incorporates an extra feature called 'Restart'. This allows you to instantly *restart* the ROM game.

RomSlot is guaranteed for 12 months and has a full width expansion connector to accept joystick interfaces, speed units and printers etc.

QUICKSHOT

The Quickshot joystick is an excellent value game controller incorporating suction cups for sure-footed precision with a comfortably contoured handle offering a convenient top firing button as well as one on the base.

QUICKSHOT II

Quickshot II has improved styling with a trigger type firing button as well as the top firing action, with a broader base for greater suction stability.

It also has a unique 'Auto-Fire' facility which at the flick of a switch provides a constant rapid firing action simulating a fast trigger finger.

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AGF RomSlot	£ 9.95 + £0.50 p&p	☐
AGF Interface II	£ 9.95 + £0.50 p&p	☐
Quickshot II Joystick	£10.50 + £0.50 p&p	☐
Quickshot Joystick	£ 7.95 + £0.50 p&p	☐
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SPECTRUM SPOOLER

Having problems interfacing? Peripherals won't talk to you any more?* Simon Goodwin *has a solution for QL and Spectrum owners throughout the land . . .

This project sets out to cure two major weaknesses of the Sinclair Research QL: first the unorthodox RS232 printer port, and second the lack of multi-tasking when printing (the computer stops dead while data is being printed). The solution costs precisely nothing, so long as you've already got a Spectrum with Interface 1 and a printer. Needless to say large numbers of QL users fall into that category. If you haven't got a Spectrum, perhaps now's the time to mend your ways!

Many QL users own Centronics printers which are incompatible with the new machine's cheap general-purpose RS232 printer port. The Centronics system uses seven or eight data lines, sending 'parallel' data a byte at a time, whereas the RS232 standard uses only one data line, sending characters bit by bit (literally). Obviously this saves transistors for Sinclair Research, but it's also landed many QL users in the unfortunate position of having a posh printer and a posh computer, with no means of making the two talk to one another.

BLACK BOX

There are two ways of getting around this problem. You can either adapt your printer to accept RS232 signals — which usually means that you lose the Centronics interface — or you can buy a 'black box' to go between the QL and the printer thus converting the RS232 data into its parallel equivalent.

Both solutions would be expensive, except that many QL users have already got the right kind of 'black box' languishing in the attic or the garden shed. All you need to convert the data is a trusty Spectrum (16K or 48K) plus Interface 1.

After spending a few weeks poring over the QL manual, I finally persuaded the computer to talk to a Spectrum via the Sinclair Research network. This may not sound like a major feat, but it has apparently defeated hordes of software houses and computer journalists. Indeed, one guru with a 'spy' at Sinclair Research told me there was a 'hardware fault' which prevented the network from working. Luckily, I persevered!

SLAVERY

The programs were tested on version 'AH' of the QL and the network is potentially very fast. A 100K listing can be transferred in about eight seconds giving an extra feature; you can use the Spectrum as a 'slave processor', so that the QL can be used for something else while the file is being printed. This is called 'spooling', an acronym for Simultaneous Peripheral Operation On-Line (SPOOL).

```
  10 CLEAR #
  20 CLEAR 24999
  30 OPEN #4;"n";1
  40 LET m=25000
  50 LET a$=INKEY$#4
  55 IF a$="" THEN  GO TO 50
  60 POKE m,CODE a$: LET m=m+1
  70 GO TO 50
  80 REM End of File
  90 PRINT m-25000;" bytes recei
ved."
 100 FOR i=25000 TO m-1
 110 LET m=PEEK i
 120 IF m=10 THEN  LET m=13
 130 LPRINT CHR$ m;
 140 NEXT i
```

An early attempt to read data from the QL. The program's very slow as the Basic reads the network character by character.

```
  10 CLEAR #
  20 CLEAR 24949
  30 FOR i=24950 TO 24982
  40 READ m
  50 POKE i,m
  60 NEXT i
  70 RANDOMIZE USR 24950
  80 LET m=PEEK 24983+256*PEEK 2
4984
  90 PRINT m-25000;" bytes recei
ved."
 100 FOR i=25000 TO m-1
 110 LET m=PEEK i
 120 IF m=10 THEN  LET m=13
 130 LPRINT CHR$ m;
 140 NEXT i
 200 DATA 62,1,50,214,92,207,45,
33,168
 210 DATA 97,34,151,97,221,34,81
,92,205
 220 DATA 230,21,183,40,250,42,1
51
 230 DATA 97,119,35,34,151,97,24
,240
```

Using machine code, the printing loop can be accelerated to more than 1K per second — a slight improvement over my first program!

The problem now resolves itself into two parts — first we must move the data from the QL to the Spectrum and store it in the Spectrum's memory, then it must be output, character by character, to the printer.

Use a network or cassette lead (two 3.5mm jack plugs connected together) to join the computers — it doesn't matter which network socket you use. On the QL, three simple statements are needed to send a program listing down the network:

```
OPEN #3,neto_1
LIST #3
CLOSE #3
```

The first statement opens a channel for output to network Device 1 and then the listing is directed to that channel — you could use PRINT #3 to send text or numbers instead of LIST. Finally, the network channel is closed which ensures that the last few characters of the file are sent. Those keen enough can bundle the three statements into a PROCedure called, say, LLIST to save typing them repeatedly. You can output individual lines, or part of a listing, with commands like:

```
LIST #3,10 TO 50
LIST #3,20,310,400
```

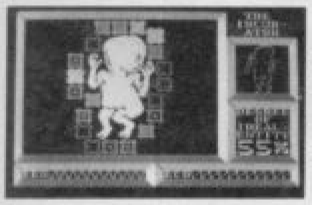
At the Spectrum end, things are a little more tricky. You can't use INPUT to read lines from the QL, because the QL uses CHR$ 10 (line feed) to mark the end of each line, rather than the Spectrum's CHR$ 13 (carriage return). This means you have to resort to INKEY$ to read characters, one by one, from the network.

FORGING THE LINK

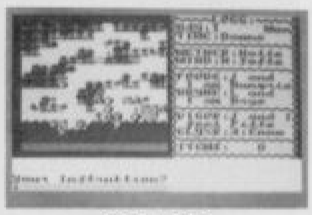
The first listing shows my early successful attempts at reading data from the QL. An OPEN is used, as normal, to associate Channel 4 with data from the network. Then, INKEY$ fetches characters one by one. These are then POKEd into reserved memory — about 40K of data can be stored on a 48K Spectrum, and 7K on a 16K machine. In the interests of speed, there's no check for overflow.

Once all of the data has been received, the Spectrum stops with an 'End of file' report. You could trap this error, but personally I chose not to, since I use the ZX LPRINT printer interface which requires that you throw a switch to select it in place of the Interface 1. When you're ready to print, type GO TO 80 and the Spectrum prints out the characters it's received, while the QL can get on with other things. If you have trouble typing 'blind' you can add this line to the program:

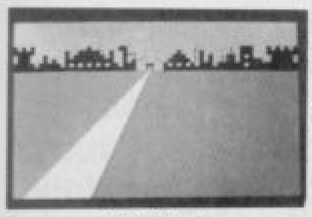
AUTOMATA U.K.
The Piman's Software House


DEUS EX MACHINA

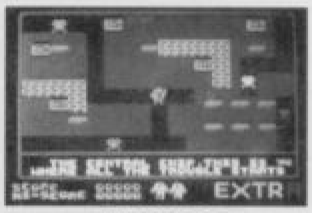
DEUS EX MACHINA 48K Spec. Kempston Joystick & ZX Interface 2 compatible. The unique new era of entertainment, starring Ian Dury, Jon Pertwee, Frankie Howerd and you, in an animated televised fantasy, synchronised to an incredible stereo soundtrack. There is nothing like it in this world.


CRUSOE

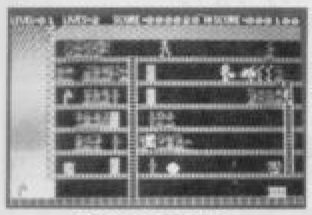
CRUSOE 48K Spec. M/C Graphic & Text Adventure. Shipwrecked and stranded, on ye remote island, with nothing save a bottle of Granny's patent elixyr, an empty stomach, ye shorts that he stands up in . . and thou. Ye adventure is only just beginning. Can you help him escape ye island's perils?


PIMANIA

PIMANIA 48K Spec. The Cult Adventure that's for real! Could you be the lucky winner of 'The Golden Sundial of Pi'? Many have tried and failed. Voted program of 1983 by the Computer Trade Association (Joint winner).


PI-IN'ERE

PI-IN'ERE 48K Spec. M/C Arcade Style. Kempston Joystck & ZX Interface 2 compatible. 61 screens of action as Burt searches for the elusive bug inside a computer, while keeping out of the reaches of the minor menaces. The program includes Hi-Score, Save and Load facility as well as Replay from last position feature.

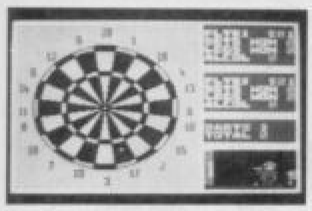

PIROMANIA

PIROMANIA 48K Spec. M/C Arcade Style, Kempston Joystick & ZX Interface 2 compatible. Strike a light! Fire your imagination. That bright spark of a Piman is flaming well out to make the residents of Automata Towers the toast of the town! Can you help Walter Hose dampen the Piman's extinguished career and help the inmates give up smoking?

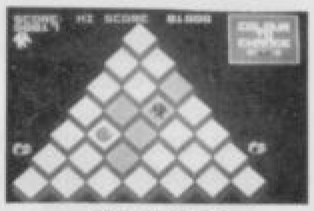


OLYMPIMANIA

OLYMPIMANIA 48K Spec. M/C Arcade Style. Currah Micro Speech & Kempston Joystick compatible. For all those who just can't get enough of the Olympics, the Piman stages his own just for you! Yes he's going for gold in the craziest events you've ever seen! Can you set new world records in the Speepichase, Alpi Ski-ing, Pitathlon, Pi-Jump, or even the Butterpi? The Piland International Anthem on the flip side.


DARTZ

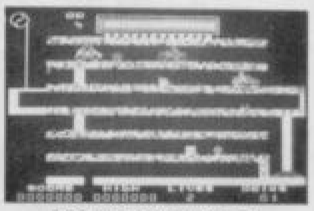
DARTZ 48K Spec. Family fun. This 'arrowing version of your local's favourite game! Includes true life scoring with 'The more you play the more you drink, the worse your game becomes' rule!


PI-BALLED

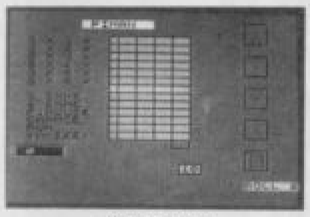
PI-BALLED 48K Spec. M/C Arcade Style. Currah Microspeech & Kempston Joystick compatible. Bouncy, bouncy, this fast action game will let you have a ball! Starring The Balls Brothers, Sid the Snake, Jas'n'Col, and your friend and ours The Piman.


PI-EYED

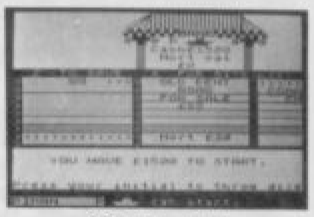
PI-EYED 48K Spec. M/C Arcade Style. Kempston Joystick compatible. The Piman's hit the bottle! Can you help him negotiate the traffic and drink the town dry?


MORRIS/BIKERS

MORRIS MEETS THE BIKERS 16/48K Spec. M/C Arcade Style. Kempston Joystick compatible. Morris finds himself abandoned in a multi-storey car park. Help him gather the 10 coins per screen to pay his way out, while avoiding the kamikaze bikers.


YAKZEE

YAKZEE 48K Spec. and Dragon. Family fun. An oriental game of luck and skill for 1 to 4 players, playing between 1 to 4 rounds. Each tape comes with both the Dragon and the 48K Spectrum versions along with a simple to follow guide on how to play YAKZEE.


GO TO JAIL

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SPECTRUM SPOOLER

```
25 LET g=80
```

Then, use 'GO TO g' (all on one key) to start printing. In the printing loop an IF statement is used to convert CHR$ 10 into CHR$ 13. Some printers don't require this.

That listing worked, but it was irritatingly slow — the Basic program read the network character by character, taking ages to read the entire file. The slow speed of the printing loop didn't matter so much, since the QL could get on with other things by that time; anyway, it didn't have much trouble keeping up with the 80 characters per second (with a following wind) of my printer.

SPEEDING

The solution is shown in the second listing, which does exactly the same thing as the first except that it uses machine code to read the network, consequently working much faster. This code reads the network at a rate of more than 1K per second. It keeps the next data address at 24983 and 24984, so that line 80 can locate the end of the data when it has all been received. Once again, you should use GO TO 80 to start printing once the QL cursor has re-appeared.

The machine code assumes that the QL is Net Device 1 (the default). Change the second item of DATA on line 200 if this is not the case, or if you are using a network containing a group of QLs or Spectrums with a variety of device numbers. If you store the Spectrum program on Microdrive under the name 'run' you can set up the spooler by just typing the keyword RUN once the computers are turned on.

This program could save you £50 or more for an RS232 to Centronics converter and it also makes your QL more powerful into the bargain. YS



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Welcome to our regular adventure page. The cast of contributors includes **Clive Gifford**, *author of* **Adventures For Your Spectrum, Gary Smart** *and* **Neil Mackintosh** *who are all avid adventure fanatics. The Green Goblin is our own* **Peter Shaw**, *author of* **Creating Adventures on Your ZX Spectrum.**

A'VENTURE INTO THE UNKNOWN

Probably the most popular adventure ever created for any home computer is Melbourne House's *The Hobbit.* It's fitting therefore that our first foray will be into this computerised version of Tolkien's classic book.

Most of you will have read (or have found out by other devious means) the art of escaping the Goblin's Dungeon on the shoulders of Thorin. (By the way, Thorin's usefulness is over once he has performed this task — but stick with him in case you get thrown back in the dungeon.) The quickest way to the dragon's domain — and hence the treasure — is via the Elfking's Dungeon, so tarry by the Forest Gate until an elf comes along and throws you in the Red Dungeon. From there, wait until the Red Door is unlocked, go West and hang around until the butler throws the barrel through the trap door; when that occurs, jump on to the barrel and you'll be taken down the river towards Long Lake and the Bard.

THE FINAL STAGES

Once you've reached the village in the middle of Long Lake island, you'll meet the Bard with his bow and arrow. This is the only weapon that can kill the dragon and the Bard is the only person with the strength to use it, so tell the Bard to go North, then follow him. After a while he'll stop at a point where there is no exit in that direction. Tell him to go up, follow him, then continue north.

When you encounter the dragon, tell the Bard to shoot it. This leaves the way open for you to take the treasure from the dragon's halls and escape.

THE LONG WAY HOME

Head south, back the way you came, until you reach the fountain. It's rumoured that there is in fact a way back through the fountain itself — but after spending hours trying, the method still eludes me. The only alternative seems to be to go along the Forest Road. Those of you who have already tried this particular stretch will have realised the difficulty of negotiating it without finding something dropping on your head and stinging you to death. The solution is to wait twice in each location. Once through all that, getting home is pretty straightforward. The adventure is completed by the act of putting the treasure in the chest. YS

Having problems with an adventure? Can't get past the Green Door? Well, the YS *Adventure Helpline will get you through. Just telephone when you're lost, stuck or just plain suicidal. In England and Wales the contact is Gary Smart (0264 59489). In Scotland, try Neil Mackintosh (041 332 2216).*

SHERLOCK

Sherlock the so-called sequel to *The Hobbit* is with us at last. I say 'so-called' because in actual content there's little resemblance between the Middle Earth fantasy of *The Hobbit* and the Victorian setting of *Sherlock.*

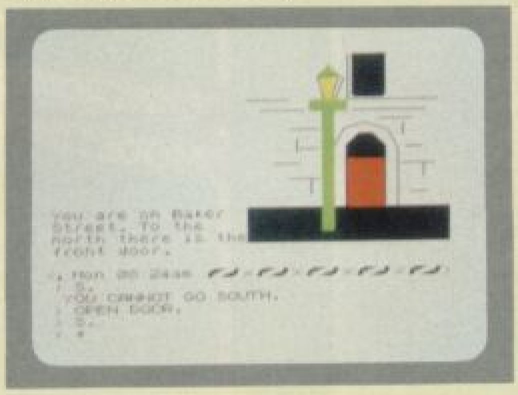
Again, *Sherlock* is an adventure which has yet to be beaten. It's based (of course) around the famous series of books and follows the detail of the Sherlock Holmes mystery stories quite accurately.

The Melbourne House team, headed by *Hobbit* programmer Phillip Mitchell, has made good use of detail and the overall effect is most realistic. From taking a Hansom cab or train from Baker Street (Sherlock Holmes never walked unless he had to), to paying for everything in pounds, shillings and pence, one's taken realistically back to the Victorian streets and submerged in a really impressive adventure setting.

Presumably sheer size and realism have taken their toll of available memory, so the result is simpler than *The Hobbit,* though not by much. *Sherlock* also boasts Animtalk and Inglish. Animtalk is a development that allows the player to converse and instruct the other characters in the adventure — including the amiable Watson, the baffled Inspector Lestrade and a host of 'nasties' (from the humblest housebreaker to . . . no, that would be telling).

Inglish is a more significant development. It allows you to talk to the characters and control Holmes in a language that's far closer to plain English than has previously been achieved with Spectrum adventures. A sentence like 'pick up the note and take the lamp out of the house', or 'open the window quietly with the large stick' will be happily accepted and acted upon by the computer.

Is *Sherlock* as good as *The Hobbit?* I'd say yes and possibly (though further playing would reinforce this) even a little better.



Sherlock* — an *elementary* program from Melbourne House — looks set to top *The Hobbit!

LORDS OF MIDNIGHT

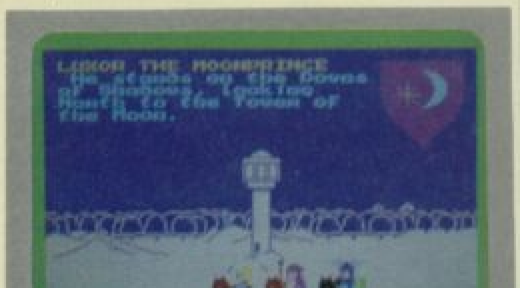
It wasn't that long since computer adventures were solely text affairs. Now there are hundreds that boast total graphics or a hybrid text/graphics name tag.

Now standards are set to rise again with the release of Beyond's *Lords of Midnight* — an adventure featuring a new system of graphic design called 'landscaping'. It may not be what you had in mind for gardening, but with landscaping, *Lords of Midnight* is able to provide some 32,000 different panoramic views. Astounding!

The adventure itself has strong Tolkien overtones. You control four characters, including Luxor the Moon Prince, to defeat the extremely evil Doomark the Witchking. The game is very complex, but always fascinating.

Apart from the landscaping system, the other feature which sets it apart from the rest is the way you control the characters and see the world through their eyes. Each of them must be guided using commands which, unlike the majority of adventures, are given to you — there's no need to search for them in the game. Each character has his own distinctive personality which colours the way each character thinks and helps to determine the options open to you as controller.

Mike Singleton, master adventurer and renowned 'Play By Mailer' has produced a program that, with luck, will start an industry trend towards more complex plots, multi-character interaction and superior graphics. *Lords of Midnight* is a must for all serious adventurers . . . you'll find it a taxing and exciting change from the usual crop.



***Lords of Midnight* uses a graphics designing technique called 'landscaping', which allows some 32,000 different screens!**

IAN McKINNELL

Peripheral perfection



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THE COMPLETE MEGABASIC TUTORIAL PART 1

Your Spectrum *presents the first in a series of tutorials on the amazing new language for the ZX Spectrum —* YS MegaBasic. *Mike Leaman details two of its most outstanding features — windows, and the manipulation of character sets.*

Once you've got hold of your very own copy of *YS MegaBasic* (*And that won't be long now! Ed.*), the features that are going to grab your attention first of all are going to be the use of windows on-screen and the ease with which you can manipulate the different character sizes. So, without further ado, let's take a look at the screen output and the commands you'll need to be *au fait* with before you get down to some serious Mega-programming.

FRAMING WINDOWS

A 'window' is an area of the screen to which you can output any characters. This area can be specified to be any size and in any position on-screen. Users can have any number of windows active at any one time, but the normal limit is 10 without involving the use of special memory-saving techniques which I'll detail once you've had a chance to play with *YS MegaBasic* yourself.

If windows are positioned on-screen such that they overlap, you'll find that printing to one window will obliterate whatever's in the other window. For this reason, it's best to plan out exactly what screen layout you're after before you commit yourself. You'll also find that characters scrolled off the top of a window are lost — an indication that the window techniques offered by *YS MegaBasic* are not quite the system you'd expect to find in computers like the Apple Mackintosh ... but then, there's a slight difference in the price of the Spectrum compared to the Mac!

The normal Spectrum can be thought of as having a single window of a fixed size, and associated with this window are the following features — the PAPER colour, the INK colour, the BRIGHT state, the FLASH state, the INVERSE state and the OVER state. However, with *YS MegaBasic*, the Spectrum can make use of up to 20 user-definable windows, each having the following features attributed to them — the character size, the PAPER colour, the INK colour, the BRIGHT state and the FLASH state. The current character set or FONT, the INVERSE state and the OVER state can be said to be features of all 10 windows and so are referred to as 'global' features. It must be noted that the FONT state only has effect when normal and double-height characters are selected; half-width characters use a special predefined character set.

A SIGN OF CHARACTER

Moving on to the character sets themselves, the Spectrum screen under *YS MegaBasic* can be thought of as having 64 columns and 24 lines. This feature allows half-width characters to be used on-screen; half-width characters can be printed in any column of the screen, whereas normal and double-height characters can only be printed at column

SCROLLING WINDOWS DEMO

```
 10 CURRENT_4
 20 WINDOW_6,0,10,64: PAPER 6: INK 1:CLW_0
 30 CURRENT_5
 40 WINDOW_0,12,6,40: PAPER 7: INK 1:CLW_0
 45 MODE_3: PRINT AT 0,10;"MEGA-BASIC"
 50 CURRENT_6
 60 WINDOW_16,12,6,40: PAPER 7: INK 1:CLW_0
 70 MODE_3: PRINT AT 4,10;"MEGA-BASIC";
 80 FOR A=0 TO 255
 84 CURRENT_4
 90 PLOT 255,88-35*SIN (A/128*PI)
 95 PLOT 255,88+35*SIN (A/128*PI)
100 PAN_0,-1
110 CURRENT_5:SCROLLW_-1
120 CURRENT_6:SCROLLW_1
130 NEXT A: GO TO 80
```

- Line 10: Selects window 4.
- Line 20: Defines the size and position of window 4, and clears it with yellow PAPER and blue INK.
- Line 30: Selects window 5.
- Line 40: Defines the size and position of window 5, and clears it with white PAPER and blue INK.
- Line 45: Prints the message 'MEGABASIC' using double-height characters.
- Line 50: Selects window 6.
- Line 60: Defines the size and position of window 6, and clears it with white PAPER and blue INK.
- Line 70: Prints the message 'MEGABASIC' using double-height characters.
- Line 80: Sets up a FOR ... NEXT loop (see line 130).
- Line 84: Selects window 4.
- Line 90: Plots a cosine wave.
- Line 95: Plots a sine wave.
- Line 100: Scrolls window 4 one pixel to the left.
- Line 110: Scrolls window 5 down one pixel.
- Line 120: Scrolls window 6 up one pixel.
- Line 130: The 'NEXT' part of the loop, creating the movement on-screen.

This demonstration creates a central window (window 4) containing a sine and cosine wave moving from right to left. In the top and bottom windows (windows 5 and 6 respectively) the word 'MEGABASIC' scrolls down and up the screen.

positions which have an even number. It must also be noted that although the character resolution has been improved, the colour resolution has not.

The character sets for FONTs 1 and 2 are stored in RAM allowing users to redefine them at will for whatever requirements you may have. Also, characters 128 to 143 are also stored in RAM (the normal Spectrum character set). Thus, it's now possible using the normal method of constructing Spectrum user-definable graphics to obtain up to 229 UDGs — just think of the graphics you'll be able to include in your own Mega-programs!

IN COMMANDS

Before you take a look at the listing I've prepared to illustrate these aspects of *YS MegaBasic*, have a look through the detailed explanation of each of the commands associated with the creation of windows and the manipulation of the different character sets.

Note that when you're looking through the tables of commands that 'n' denotes a numeric expression and '$' represents a string expression; and expressions shown in brackets are optional. When you're using *YS MegaBasic* commands which require numeric or string expressions, there's no restriction to the complexity of the expression and all standard ZX Basic functions can be used alongside the new ones. YS

YS MEGABASIC WINDOW COMMANDS

COMMANDS	COMMENTS
CLW_(n),n	This command enables the user to clear a window in a number of different ways. The numeric expression will usually be in the range '0' to '3'; any other number will be taken by the MegaSpectrum to be a '3'. Action taken by CLW depends very much on the value of the numeric expression, as shown below: (0) — The window is cleared, just as the CLS command on the standard Spectrum; (1) — The window is cleared with INK instead of PAPER; (2) — The window is inverted, ie, the INK is turned to PAPER and the PAPER is turned to INK; (3) — Only the attributes are cleared. This final option allows you to change the colour of a window without clearing the contents of the window.
CURRENT_n	This allows the user to select which window is used for output. The variable, n, can be any value between zero and nine; any value outside these limits will result in an 'illegal window' error.
DOWN_n,n,$	This command prints a string downwards in the current window. The two numeric expressions give the co-ordinates from which the string should be printed.
FX_n,n	This is a general command enabling the user to control the way in which the *YS MegaBasic* system operates. FX calls values of '0', '1', '2' and '3', allowing users the option of which windows are used for specific tasks by the system. For example, FX_0,n selects which window is used for command input, FX_1,n decides the window used for automatic listings, FX_2,n selects the window used as the default program output window and FX_3,n decides the window used by the Front Panel. Using each of these FX calls, it's possible to use the same window for all four functions!
PAN_n,n	This command's used to scroll the current window to the left or right, pixel-by-pixel. The first expression defines whether the window is filled with INK or PAPER, and the second controls which direction and by how many pixels the window should be scrolled.
PANW_n	This is similar to PAN, except that the window's contents wrap around; that is, what comes off one side of the window automatically appears at the other side.
SCROLL_n,n	This command is similar to PAN, except for the fact that the window is scrolled up and down instead of left and right.
SCROLLW_n	Again, the equivalent to PANW, except that it controls up and down scrolling instead of movement left and right.
WINDOW_n,n,n,n	This command defines the size and position of the current window. When the command is executed, the position of the cursor is reset to the top left corner of the window. The first two numerical expressions define the position of the window — first the Y co-ordinate, then the X co-ordinate. The second two expressions define the depth and width of the window respectively; if either of these two expressions are zero, you'll get a 'window too small' error. If the Y co-ordinate plus the depth give a window greater than 24 lines, or the X co-ordinate and the width give a window greater than 64 columns, a 'window too large' error will be produced.

YS MEGABASIC CHARACTER COMMANDS

COMMAND	COMMENT
FONT_n	This command selects the character set used for screen output. FONT_0 gives you the standard ZX Basic character set, and FONT_1 and FONT_2 and select between the two RAM character sets. If you use a value of 'n' that's greater that two, then FONT_2 is assumed.
MODE_(n),n	The MODE command enables the character size to be used for printing. If two expressions are specified, the first value denotes the window whose character size is to be defined and the second expression is the character size to be selected. If you use only one expression, it's assumed that any alteration is carried out on the current window. The value of 'n' should be '1', '2' or '3'; any other value given will mean that no characters are printed — quite useful if you want to switch off a particular window.
PRINT CHR$	Character sizes can also be defined in a PRINT statement by use of control codes. Character sizes '1', '2' and '3' are now used to select the character size for the current window, ie, PRINT CHR$; "MEGABASIC" would print the message 'MEGABASIC' using double-height characters.

The above tables detail the commands associated with the construction of windows and the manipulation of character sets.

· · STOP PRESS · · · STOP PRESS · · · STOP PRESS · · · STOP PRESS · ·

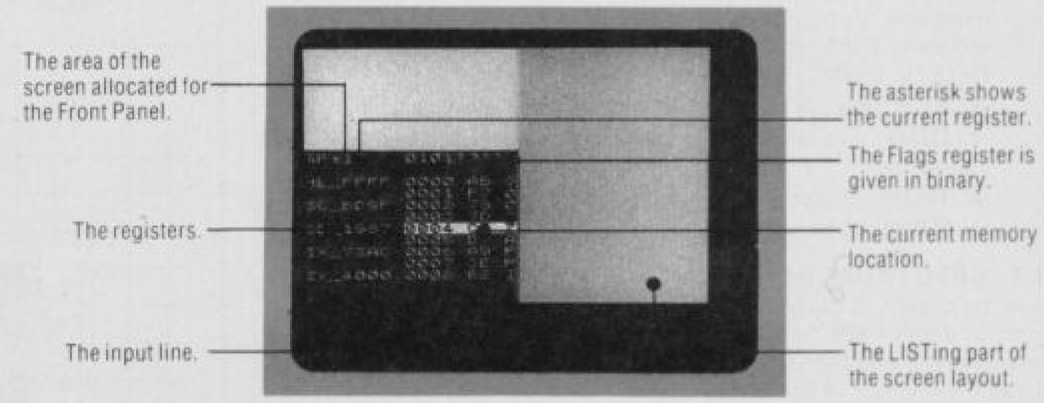
Being given a deadline for a piece of software that's taken me over a year to produce, I couldn't resist adding a few final touches to make it last just that bit longer in the marketplace ... and also to make it more user-friendly!

You may have noticed in this month's tutorial a brief mention of the Front Panel. Well, to explain that a little, the Front Panel allows the user to get to the heart of the Spectrum — the Z80 processor itself. Thus, you can easily alter the contents of the registers and alter the way the Spectrum operates.

Entering the Front Panel using the command 'MON' (or pressing the Space and 'F' key together) produces a display showing the current piece of memory in yellow and the registers in cyan. At the bottom of the display is a green cursor which the user can use to enter bytes into memory by typing their values in hexadecimal. Each time a value is entered, the current memory location is advanced by one or, if a change isn't needed, you can just press Enter. Stepping back through memory is just as easy using the minus key.

As well as entering bytes into memory, users can also make use of other features using the single-letter commands shown below. If you make a mistake, not to worry, any command can be aborted simply by pressing the Space key. YS

Note that in the table on the right, the variable 'n' represents a hexadecimal number.



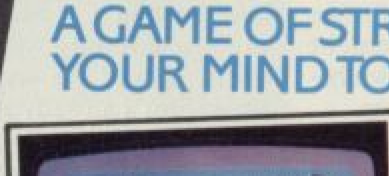
Once called on-screen, the Front Panel appears in the Input window of the layout.

MEGABASIC FRONT PANEL COMMANDS

COMMAND	COMMENT
I n,n,n	Fills a block of memory with a certain value.
J n	Calls a machine code routine at the address specified by the user.
L n,n,n	Moves a block of memory from one location to another.
M n	Sets the current memory location to the address specified by the user.
P	Advances the current register pointer.
R n	Enters a value into the current register.
S	Sets a 'break-point' at the current memory location. (A 'break-point' is a piece of machine code which transfers control to the Front Panel; so if you set a break-point at a certain address, when the processor reaches that address the Front Panel will appear.)
U n	Recovers the break-point. This command restores the machine code which was over-written by the break-point code.


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SINCLAIRWATCH SPECIAL

THE SHAPE OF THINGS TO COME?

More than just a rumour ...* Your Spectrum's Roger Munford *gives you a sneak preview of the latest addition to the Sinclair Research range of computers — the soon-to-be-released ZX Spectrum+.



The video functions have been pulled out on to separate keys to make these controls more accessable.

Another annoying consequence of squeezing so many functions on so few keys of the Spectrum is that editing and deleting program lines can be quite tricky. With separate keys to carry out these functions, the whole process becomes much easier.

One of the most confusing aspects of selecting commands on the Spectrum is the way that you have to access different modes before pressing a command key. On the Spectrum+, you'll be able to jump straight into extended and graphic mode at the touch of a single key.

On each side of the keyboard, you'll see there's a Caps Shift and Symbol Shift key. No longer do you have to have hands spanning two octaves to access some of those hard-to-get-at commands.

This time last year, the spicier rumours around town concerned the identity of the new machine Sinclair Research was keeping very close to its chest. Speculations ranged from a complete re-design for the business market (which it turned out to be) to an upmarket Spectrum re-package, complete with Interfaces 1 and 2 and Microdrives (which also played their part in the QL's design). However, once the QL was launched, all thoughts of any other machine were lost in the press attention that followed ... until now.

ON THE PLUS SIDE

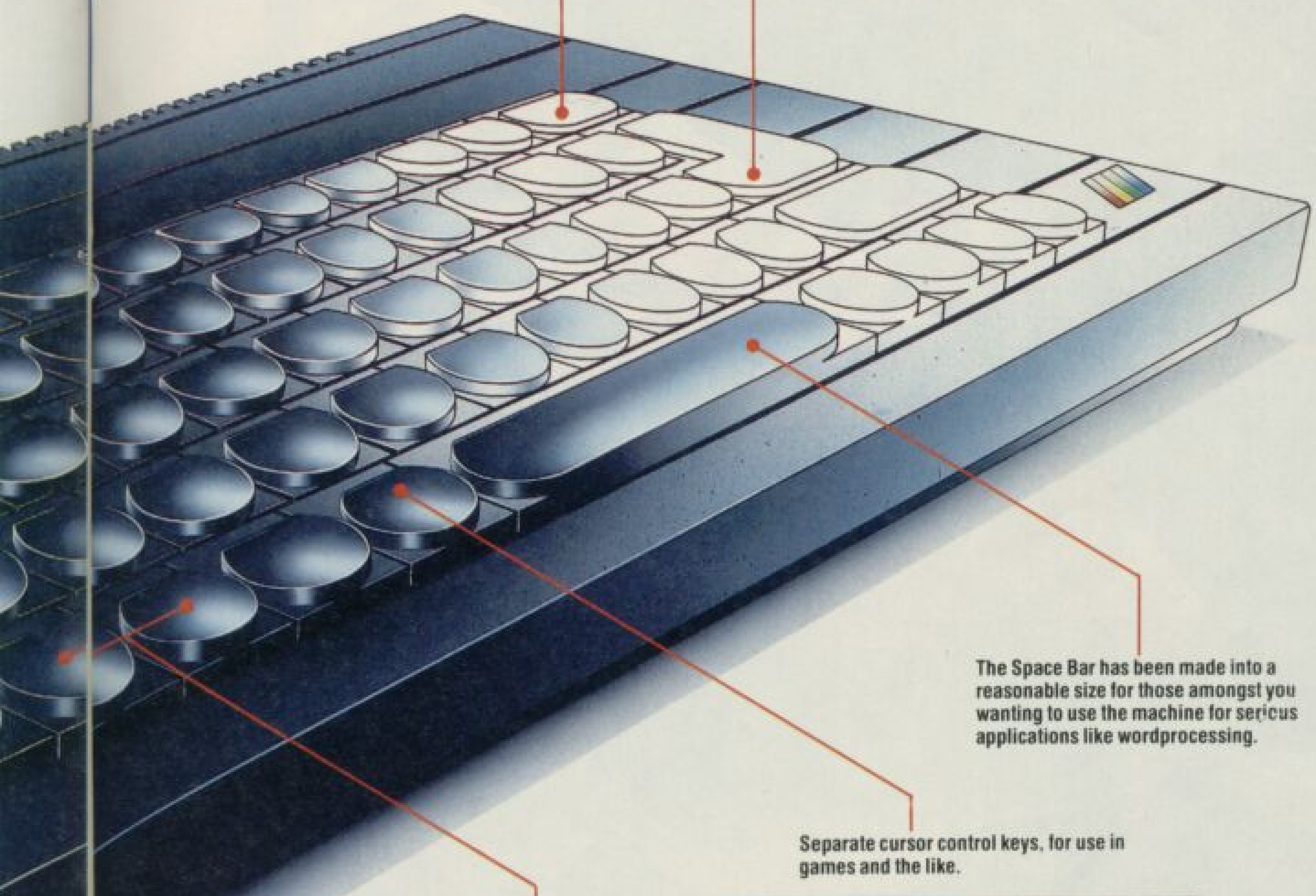
Your Spectrum has good reason to believe that Sinclair Research will be launching a new machine to hit the market just before Christmas. Called the Spectrum+ (Plus), the computer will look a little like a QL, only not quite so big, incorporating a QL-like keyboard — complete with Space bar, separate cursor keys, left- and right-hand Shift keys, additional command keys, and a membrane beneath the keyboard.

The first signs of any future development was the announcement that Sinclair Research would be "doubling production of the Spectrum ... allowing production to ramp up to over 200,000 units per month by the end of the year" (as reported in *YS Frontlines* issue 7). OK, so we know Sinclair Research has cracked the foreign computer markets of late ... but 200,000 per month?

At a recent 'selected' press meet, Managing Director Nigel Searle was up against a barrage of questions as to what announcements Sinclair Research would be making — just what was its next computer going to look like? Sensing no real meat to the question, Searle threw it back at the audience, "What would you do?". To the rather astute suggestion that it could be "a re-packaged Spectrum with a new keyboard, but maintaining software compatibility", Searle deflected the remark skillfully with another question, "Why would we want to do that? The Spectrum's already a successful product — this new machine would cost around £149/159 ... does that seem to make commercial sense to you?". After much wise shaking of heads from those assembled, the idea was dismissed as ridiculous.

But it's not that ridiculous when you *really* think about it. OK, the Spectrum's an old product — in terms of computing, it's positively ancient! But that's not to say that it's out of date — the Spectrum is still extremely good value for money and the support it has from software and hardware companies is unbelievable — and that's over two years *after* its launch.

Think back to the press release announcing the production figures for the Spectrum — 200,000 per month by the end of the year. Now cast your eyes over the illustration we've constructed of the Spectrum+; the casing for it is very similar to that of the QL, so presumably the equipment to manufacture it would only have to be slightly tailored to suit the new machine's dimensions. Is it all beginning to make a bit more sense? Yes, it seems that Sinclair Research could be





in the position to not only announce the Spectrum+ over the next few weeks, but also to have some of the devices available for sale *immediately!*

NOT ON SHOW

The rumours of the new machine were strongest at the PCW Show, where an announcement was supposed to have been made. But the show passed without comment and it is left for Nigel Searle to make the final contribution, "I can't comment on the possibility of a new machine — but I can promise you the Spectrum, *in whatever form,* will be with us for many years to come." Searle also mentioned the possibility of TV advertising, supposedly over the pre-Christmas period, which will be used to promote Sinclair Research products. Could this be a hint that it's for the Spectrum+? Watch this space for further developments... YS

SPECTRUM+ SPECIFICATIONS

DIMENSIONS

Width 320mm
Depth 150mm
Height 50mm (at back)
40mm (at front)

CPU

MEMORY CAPACITY AND SPEED

16K ROM (containing Basic interpreter and operating system)
48K RAM
3.5 MHz

SCREEN CHARACTERISTICS

The screen comprises 24 lines of 32 characters. Bit-mapped graphics with resolution of 256 x 192. 16 pre-programmed block graphics. 21 user-definable graphics characters. Eight colours (plus FLASH, two brightness levels and an independent Border colour.)

INTERFACES AND PORTS

System bus connector. (From the information available to *YS* it would seem that the Interface 1 unit will need substantial re-design to connect to the Spectrum+.)
Sockets for cassette storage and TV.

LANGUAGES

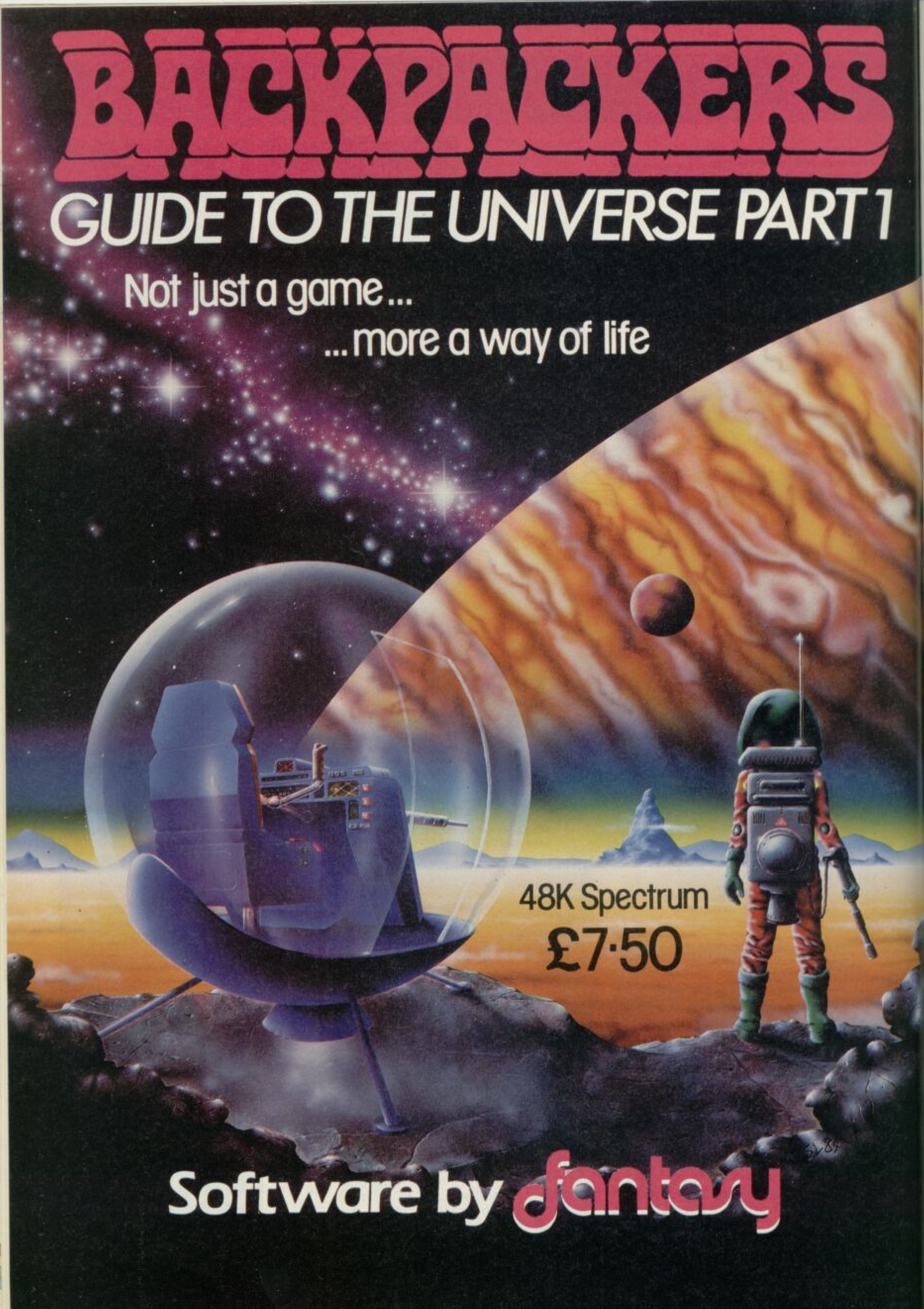
ZX Basic and Z80 assembly language.

KEYBOARD

58 moving-key membrane QWERTY layout (à la QL).
All keys have auto repeat.
Although the majority of the Spectrum+'s keys can each access up to eight separate functions (using a similar Shift system to that used by the Spectrum), the Spectrum+ has a number of command-specific keys to ease accessability; these include separate cursor keys, left- and right-hand Shift keys, Edit, Delete, Inverse Video, True Video, Break, Extended Mode, Graphics Mode, as well as a much larger Space Bar. There's also the possibility of separate List, Save and Load keys.

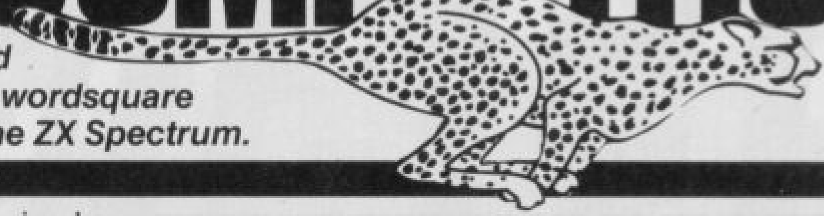
DOCUMENTATION

The Spectrum+ will come complete with a new manual, containing a guide to the computer's operation and an introduction to ZX Basic. There will also be a 'Horizons+' tape for first-time users to get the hang of manipulating cassette-based programs.



BACKPACKERS
GUIDE TO THE UNIVERSE PART 1
Not just a game...
...more a way of life
48K Spectrum
£7·50
Software by fantasy

CHEETAH COMPETITION



In association with Cheetah Marketing and Cheetahsoft, Your Spectrum brings you a wordsquare competition with over £800 of prizes for the ZX Spectrum.

Here's a competition that everyone can enter — simply because we've split the entrants into three age groups: 12 years old and under, 13-18 years old, and 19 years of age and over. So, there's no excuse this time — if you think you're too old for competitions, you're just going to miss out!

HOW TO ENTER

Here, you'll see a 15 by 15 wordsquare and beneath it, 40 words relating to the world of Sinclair Research. All you have to do is to circle words in the wordsquare that are also in the list as well and make a note of the number you find; remember that the words can also be spelt backwards, diagonally and upside-down!

Once you've found as many words as you can (you won't find all of them because there are a few that've been thrown in to confuse you), fill in the form below with your name and address, age group and the number of words you've discovered and send it off to *Cheetah Competition, Your Spectrum, 14 Rathbone Place, London W1P 1DE. Also,* please put the number of words that you've found in the wordsquare on the back of the envelope as this'll help us find winners quickly — and get your prizes to you faster as well!

WHAT YOU'LL WIN



There will be two outright winners from each age group and these lucky lads or lasses will win a Cheetah RAT— the infra-red joy stick that's compatible with all Kempston and Cheetah RAT games. The two second prize winners from each group will win themselves a Cheetah Sweet Talker each — the speech synthesis module comes with full instructions on how to convert your Spectrum into a right old chatterbox! There are also two third prize winners in each group and these will take away copies of Cheetahsoft's latest games — *Perils of Bear George, Dragon Fire* and *MoonSweeper.* Finally, there'll be 14 runners-up for each age group, and these will win either *Conquest* or *3D Bat Attack* — two of Cheetahsoft's classic software offerings.

So, what are you waiting for? Pens and pencils at the ready and go for it . . .

RULES

- *Entries for the Cheetah Competition will be divided into three age groups, with ages taken as of 31st October 1984.*
- *In each age group, the Editor's decision is final and no correspondence will be entered into.*
- *Each entry form must have the number of words found written on the back of the envelope.*

CHEETAH/YS WORDSQUARE

B	U	S	C	Q	Y	C	O	M	P	U	T	E	R	W
A	E	R	A	T	Y	R	U	H	A	T	E	E	H	C
U	I	O	S	O	P	D	O	A	S	D	P	F	G	H
D	H	J	S	M	A	R	O	M	J	E	V	I	R	D
E	J	R	E	K	L	A	T	T	E	E	W	S	K	L
G	L	Z	T	Q	X	G	C	W	V	M	T	B	N	M
R	A	T	T	M	Q	O	S	P	E	C	T	R	U	M
O	K	Q	E	W	E	N	Y	I	E	C	R	T	O	T
E	C	Y	U	I	O	F	N	O	N	P	I	A	S	P
G	I	D	M	O	N	I	T	O	R	C	X	S	F	H
R	T	H	M	J	K	R	A	L	Z	C	L	Z	A	V
A	S	E	X	B	N	E	X	P	I	H	C	A	T	B
E	Y	N	P	M	E	C	A	F	R	E	T	N	I	Q
B	O	E	R	A	W	T	F	O	S	E	T	Y	B	R
R	J	T	T	A	T	E	E	R	A	W	D	R	A	H

RAT
DRAGON FIRE
CHEETAH
BIT
SOFTWARE
TAPE
SYNTAX
PORT
ROM
QL
SWEET TALKER
BEAR GEORGE
SPECTRUM
JOYSTICK
PROGRAM
DRIVE
BYTE
RAM
COMPUTER
ZX
BAT ATTACK
MOONSWEEPER
INTERFACE
CASSETTE
MONITOR
BUFFER
BUS
MACHINE
CHIP
CARTRIDGE
CONQUEST
SINCLAIR
PROGRAM
HARDWARE
MEMORY
BASIC
EPROM
CLIVE
BAUD
CP/M

Name ....

Address ....

....

....

.... **Postcode** ....

Age Group
(please tick) ☐ 12 or under ☐ 13-18 ☐ 19 or over

Number of words found ....

Complete the wordsquare coupon and send it to: *Cheetah Competition, Your Spectrum, 14 Rathbone Place, London W1P 1DE.* And *don't* forget to write the number of words you found on the back of the envelope.

If you don't want to deface your issue a photocopy of the form is acceptable.


RACE
MOVI SOFT
2

MANIC MIMICRY MIMICRY MIMICRY MIMICRY MIMICRY MIMICRY

Could it be that there are too few original ideas coming out of UK software houses? Ross Holman examines three new releases — Astronut, Frank N Stein and Monty Mole — and draws the inevitable conclusion ...

In the current post-*Manic Miner/Jet Set Willy* depression, many software companies seem to be striving to emulate the success of these two games, resulting in a number of semi-clones appearing recently on the market. Of the three games reviewed here — *Astronut, Frank N Stein* and *Monty Mole* — all the clichéd elements can be found, ie, little jumping figures, platforms, and collecting objects while avoiding the nasties.

I'm sure that the companies themselves had no intention whatever of the games bearing any resemblance to other packages. But, having said that, it does seem that effort, conscious or otherwise, has been made to identify the addictive or attractive elements in already published software — such as the collection of objects, pixel graphics, colourful screens and figures leaping around a series of platforms. Throw these factors into a computerised melting pot and hope that something playable comes out.

Maybe what the software houses fail to realise is that originality is a very important 'success' factor in any new package. A new version of *Defender* may still sell well, but too many variations on a theme and it's surely doomed to failure. Even Matthew Smith realised that *Jet Set Willy* had to be very different from its predecessor — just take a look at the increased size of the game, the 'move anywhere' ability and those wonderful ropes.

The novelty value of a game and the comparative standard of the coding at the time of release are also important factors — most games players look back fondly to the days of the first copies of *Space Invaders* and the excitement generated by the first 48K arcade adventures like *Time Gate*, but they certainly wouldn't fork out hard cash for them today. You only have to take a time-trip back a few months to remember the furore created when *Sabre Wulf* was released, mainly due to its similarities to *Atic Atac* — but try booting up *Atic Atac* now and you may be surprised (I certainly was!) to discover it wasn't quite as good as you'd remembered.

Producing an original game these days must be very difficult, especially as so many of the good ideas have been used. Also, it must be noted that, despite my criticism of the three games here being just a little reminiscent of others, it may well be that Matthew Smith himself had a good look at a game called *Miner 2049'er* before he buried himself in machine code to produce *Manic Miner*. The difference is, of course, that he turned a good idea into a brilliant one, with lots of original implementation based on his own ideas.

It's the originality and complexity of UK software that makes it so good, and I hope we see more and more excellent material being produced for 1985.

ASTRONUT
SOFTWARE PROJECTS

Astronut is produced by the same company responsible for *Manic Miner* and *Jet Set Willy*, although it's not billed in any way as a sequel to Matthew Smith's games. Written by Patrick Richmond, the game is attractive and colourful — but as a 'platform' game, I'm sure Software Projects are hoping that their reputation for this type of package will help this one on its way to the high street shelves.

The lack of instructions both on the cassette sleeve and on-screen (at least with the copy I've got anyway), didn't actually inspire any confidence that it was a particularly polished piece of software. To start the game, you need to press the 'S' key — and the 'Q' key is used to turn off the terrible sound effect (you'll find this is probably the most useful key in the whole game!).

Astronut's a game of some 15 screens; the object of the exercise on each screen is to push three resource blocks from various platforms down to ground level. You control the little two-cursor man and can move him left or right, or get him to drop bombs. To move the figure up the screen, you have to position him above a volcano and wait for it to erupt or, on the later screens, you can manoeuvre the figure up the ladders. Beware though, once you've started to climb there's no turning back.

Stopping you gathering the power capsules and moving the resource blocks are, of course, many assorted meanies which have to be negotiated. There's also the problem of extending platforms, which have an annoying habit of collapsing just when you want to use them!

The sprites move fairly smoothly by one or two pixels and come in the usual horizontally and vertically moving varieties; some are even more tricky and cascade back and forth along the platforms, defying gravity more often than not. The stationary graphics characters aren't your average run-of-the-mill platforms either — you may encounter dragons spitting fire and amazing castle towers — and they certainly go some way to brightening up the game.

Despite the pixel movement of the sprites, your man moves by cursor block stages, although the figure is animated within each stage. Unfortunately, this, coupled with the 'attribute collision detection' routine used, sometimes causes your figure to be pronounced dead even when there's lots of clear air between you and your killer.

Astronut is visually appealing, but it's too easy! Dropping bombs to protect yourself and timing the jumps to collapsing platforms do add an element of skill, but overall I didn't find it challenging enough. Each of the screens can be reached independently of the others by instructing the program to start on a specific screen — in my view, this spoils any suspence for the enthusiast.

FRANK N STEIN
PSS

Despite the obvious enthusiasm for this game generated by the games players in the *YS* editorial office, *Frank N Stein* was the game I liked least of the three programs.

The object of the game is to guide your two-cursor figure along platforms collecting the constituent parts of a Frankenstein-type monster — making it a little more complicated is the fact that all the limbs, etc, have to be collected in the correct order; head first, then torso, then hips and so on. To collect all the parts of the body, you have to walk over the dissected parts, while avoiding the various sprites that go through set patterns of movement around the screen.

Again, you can move left or right, but vertical movement can only be achieved by standing over strategically placed springs and hitting the 'fire' button. Small jumps are possible, but these are used mainly for letting one of the sprites pass underneath allowing your figure to safely carry on his macabre search. There are also a number of poles which can be used to descend from level to level.

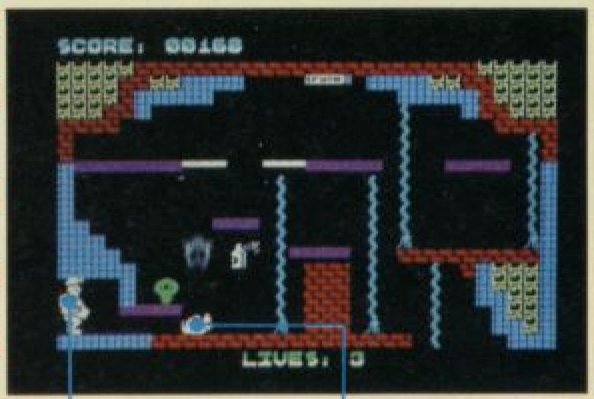
The graphics characters are mostly two-cursors, very colourful and animated fairly well, adding some welcome relief from the overall red appearance of the game. They move pixel by pixel, but they're a might bit slow — which means there are times when you're hanging around waiting for the baddies to get out of the way. This aspect is no doubt intended — escpecially as the game is played against the clock — but I feel that overall it detracted from the game.

PSS claim *Frank N Stein* has 50 screens, but don't let that mislead you as there are only 26 *different* screens. After each 'collecting' screen, there's one that repeats; this special screen is slightly different from the rest in that the object this time is to get to the top platform while avoiding random graphics characters and rolling barrels (shades of *Kong* here).

MANIC MIMICRY CO

MANUFACTURER
Gremlin Graphics
ADDRESS
Aloha House, 10 Carver Street, Sheffield.
Tel. 0742 753423
PRICE
£6.95
USE OF GRAPHICS
9/10
NUMBER OF SCREENS
21

MONTY MOLE





Here's the miner — perhaps the only reference to this game having anything whatsoever to do with the current industrial dispute!

And here's our hero, Monty, already dead from a nasty case of 'free-fall'. You can fall a certain distance without harm — but watch you don't try jumping from too great a height.

These ropes can be useful, especially when making a quick exit from a tight spot.

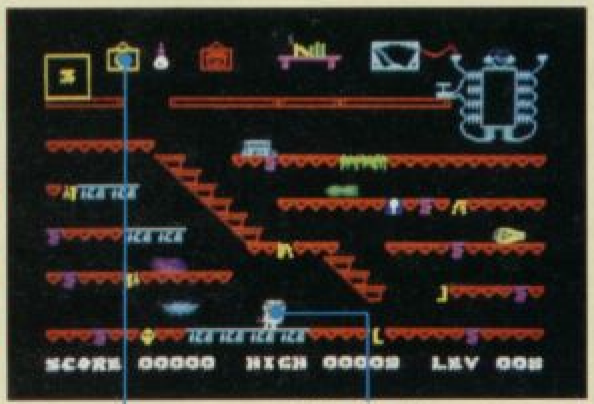
Be careful you don't slip into one of the ponds or you'll come to a swift, watery end.

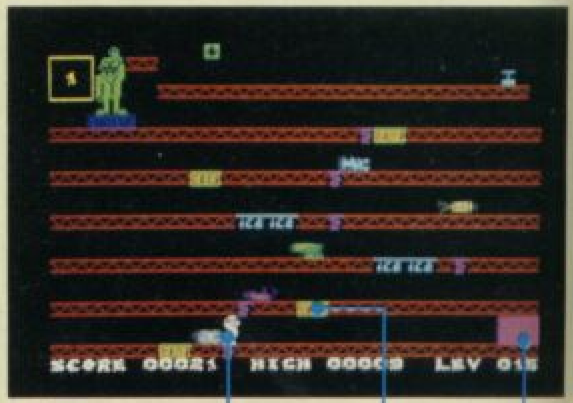
The crusher in all its lethal speed do… It seems to be totally unpredictable… its movements and you'll have to b… nimble to get through — just don't… hesitate . . . or you're dead!

This here's a… manage to go… able to nego… below wi…

MANUFACTURER
PSS
ADDRESS
452 Stoney Stanton Road, Coventry.
Tel. 0203 667556
PRICE
£5.95
USE OF GRAPHICS
7/10
NUMBER OF SCREENS
50

FRANK N STEIN





Welcome to this game's hero, the professor. Typically inept at putting together the limbs of the monster, here we see him slipping on the ice. Watch out for nasties when you're negotiating the ice, as once you're on it you can't stop.

As you walk along, the springs allow you to move up a level when you press the 'fire' key. You'll find that when you jump your head can impinge on the next level up — so make sure there's not an obstacle up there, or you'll have to start again.

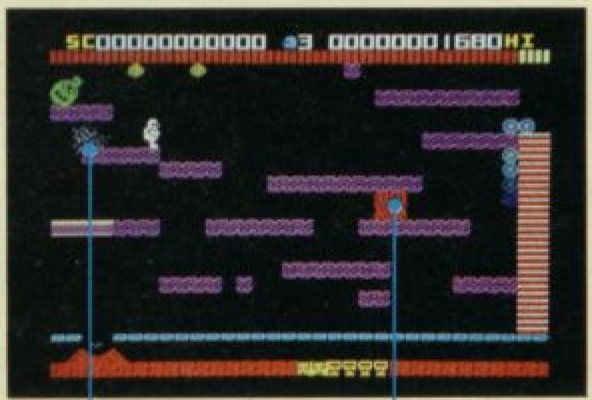
This screen shows the 'K… part of the game, which ha… each 'real' part of the adv… you have to do is to get to… the screen and push the p… move on.

This is the home of Prof. FN Stein — a modest abode, tastefully decorated with a portrait, light bulb and bookcase. Seems like he might be a nice enough chap . . . he's just got an odd hobby!

The squares marked 'J' act like transporters which slow you down on this stage of the game. As well as the ice, there's also patches of slime to slow your movements down.

MANUFACTURER
Software Projects
ADDRESS
Unit 1, Bearbrand Complex, Allerton Road,
Woolton, Merseyside. Tel. 051-428 9393
PRICE
£5.95
USE OF GRAPHICS
8/10
NUMBER OF SCREENS
15

ASTRONUT





Astronut can set the odd bomb in the path of any nasties following — it'll stop 'em for a while but don't expect miracles!

The next resource block is already in position once the first block has been placed in the flashing area designated for it. The idea is to get one side of the block and give it a gentle nudge in the direction you want it to fall.

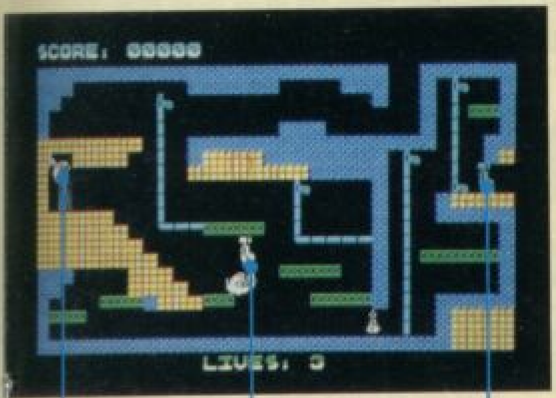
Astronut nudges the first resource block into place. You have to move three of these blocks into place to get on to the next level — unless, of course, you've chosen to start on the last level first, that is!

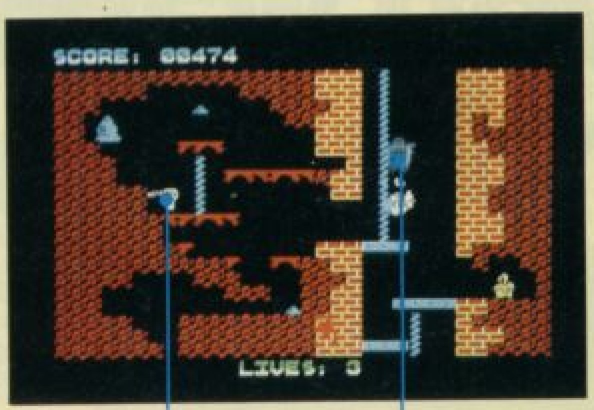
This is a pulse generator — which sends out deadly beams of energy to stop Astronut journeying round the screen.

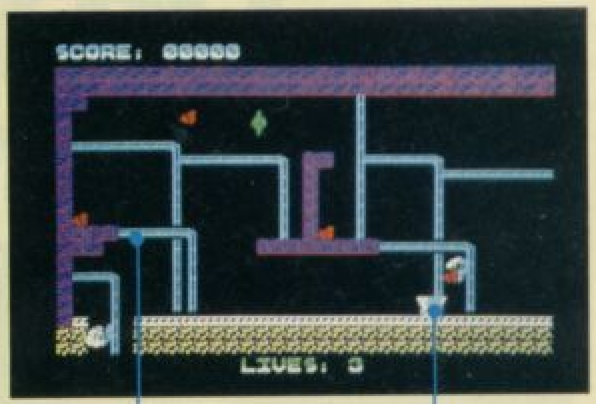
The stair… getting to t… is that once… there's no… sure your…

COMPARISON CHART









...s lethal splendour.
...ly unpredictable in
...d you'll have to be
...ough — just don't
...r you're dead!

This here's a shower — and if you manage to go and collect it, you'll be able to negotiate the moving tap below without a problem.

Here we see poor Monty failing to collect the shower and falling foul of the tap.

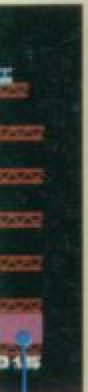
Even if you do manage to get through to *this* tap, you may have difficulty getting past it. This game demands that certain objects have to be collected in order to progress; so, if you touch one and die, you must have forgotten to do something on a previous screen.

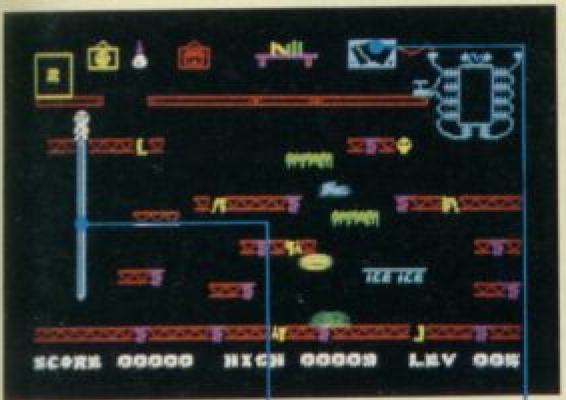
While he's down in the pit, Monty must collect all manner of objects to progress further in other levels. Here, Monty must get the drill so that he can power-drive his way to the next cavern.

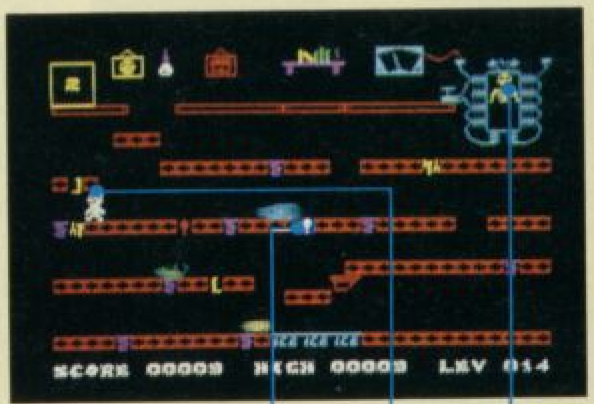
Each time you die, Monty's ghost ascends to the top of the screen and you begin again from the point you entered the screen. Trouble is, anything you've collected is taken away from you and you've got to go through the whole process again!

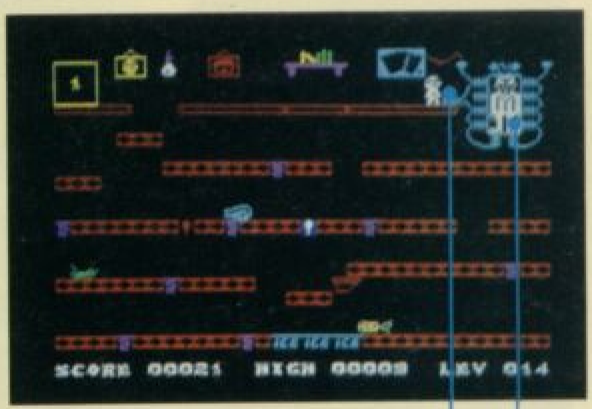
On this level, Monty has to climb all over the pipes to get through. Who'd be a coal-miner? Any takers out there . . .

There aren't all that many moving menaces in *Monty Mole*, but usually the few that exist are pretty lethal. Watch out for the mining truck that nips back and forth at the bottom of the screen — it always seems to be wherever you don't want it!









...een shows the '*Krazy Kong*'
...e game, which happens after
...al' part of the adventure. All
...e to do is to get to the top of
...een and push the plunger to
move on.

...act like
...u down on
...well as the
...f slime to
...down.

The fireman's poles come in very useful when there's no other means of escaping the nasties in your path. Their use is similar to the springs, only you go down instead of up. As the game's all played against the clock, you'll have to use the poles so's as not to waste too much precious time.

This meter tells you how much time you've left to collect all the bits and pieces that go to make up the monster. If you don't manage to push the plunger by the monster-maker in time you have to start again, right from the beginning!

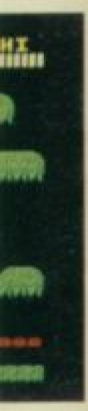
Stepping on the exclamation marks causes our hero to have a fit of what looks like *delerium tremens*. Again, it's just another method of slowing you down in your quest.

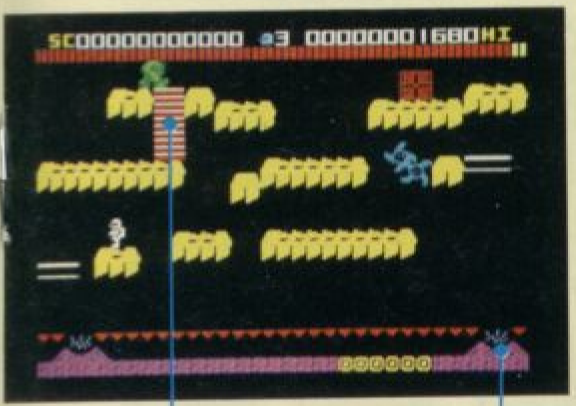
This is where the monster's made. You have to collect the limbs of the monster in the correct order and once found, they appear in this chamber.

Here we see the professor just about to collect the monster's hip bones. However, as there's a nasty on his tail, he's going to have to get on the spring double-quick and get on to the next level; then he's free to snap up the monster's other hip bone.

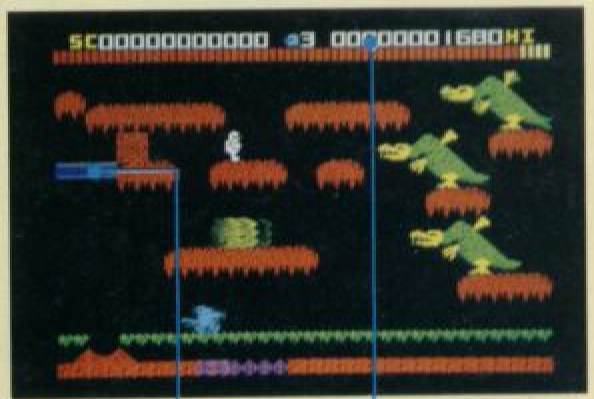
Once you've collected all the bones to make up the monster, you've got to rush up to the top level and push the plunger to send a couple of million volts through it.

The power must have done the monster some good — he looks very dapper kitted out in his Sixties outfit!









The staircases provide a way of getting to the upper levels — trouble is that once you've started the climb there's no turning back . . . so make sure your path is clear before you begin.

...h
...to
...e

An alternative method of gaining access to the upper levels is to step on one of the volcanoes and wait. When it blows, you get shot up to the first level above, whether it be a collapsible platform or a firm pathway.

You'll know where to nudge the resource blocks on each screen as an area of the bottom of the screen will flash on and off until it's filled.

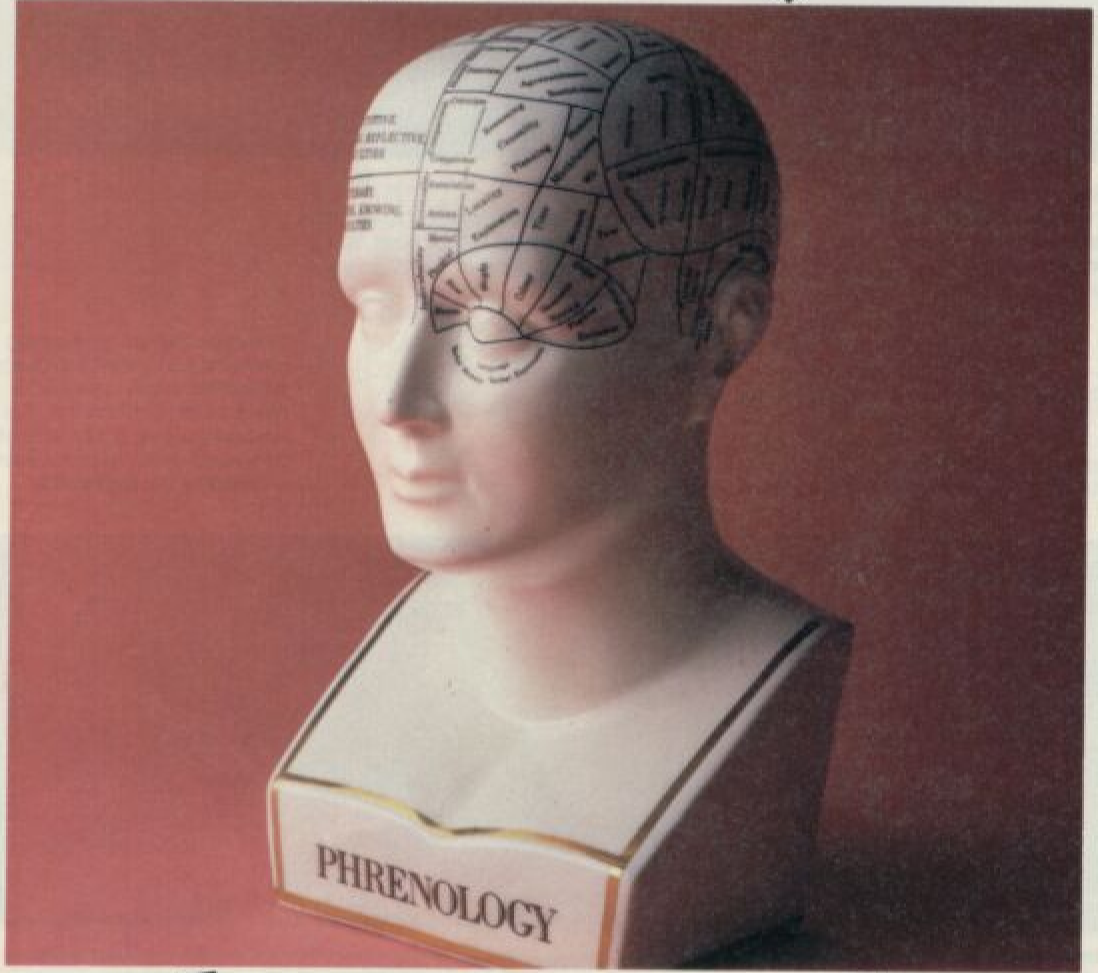
You can fall as far as you like in *Astronut* without coming to grief. Trouble is, falling can sometimes land you in more trouble than you bargained for. . .

Some of the platforms comprise some very interesting graphics — take this tree for example. The graphics in *Astronut* are certainly a sight for sore eyes.

Watch out for the moving platforms. One minute there nice and safe . . . the next, they've completely vanished and you've nowhere to go but down!

The line at the very top of the screen is incremented and filled in as time porgresses. Needless to say, you've to complete your task on-screen before the time's up . . . otherwise it's back to the beginning of the screen.

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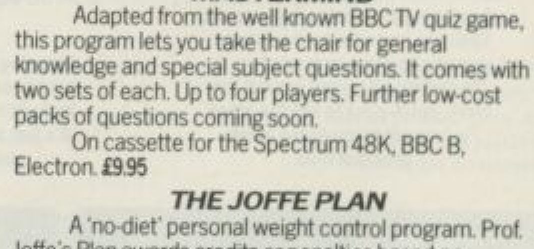
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MANIC MIMICRY

Planning out a route through each screen is reminiscent of *Manic Miner*, but it doesn't work out quite as well. If you miss the opportunity to jump for something, then very often you either die or have to hang around for the same pattern of events to repeat itself — there's not much room for you to experiment with new and original ways round each screen as more often than not, there's only one way round and that's your lot!

MONTY MOLE
GREMLIN GRAPHICS

Monty Mole is probably the most similar to *Manic Miner* but there are many similarities to Quicksilva's *Fred* as well.

This time, you get to play a mole whose graphic is on four cursors, thus avoiding any confusion that this game is based on *Manic Miner*. Your task is to guide the mole around a series of caverns — about 21 in all — until your eventual escape. This package received a lot of media attention a few weeks ago due to its supposed connections with the miner's strike and its inclusion of an Arthur Scargill character. How Gremlin Graphics conned the TV companies into believing this, I'll never know — I've been through the whole game and can find no real links at all with the current industrial situation.

Anyway, back to the game. On the first screen you guide Monty over a river to collect a coal bucket in which to steal your coal — but the owner's not too happy about this and starts chasing you down the nearest available mine shaft. Once there, you can start collecting the twinkling pieces of coal. (For all you bug-hunters, try carrying on running towards the house and jumping just before you reach it — with any luck you'll find yourself in the coal-miner's house and he can't do a thing about it.)

The caverns are, in essence, very similar to those found in *Manic Miner*, with platforms and graphics characters trollying along, and up and down. Ropes have also been added for Monty to climb up and down (á la *Fred*), and extending platforms are also used quite effectively. You'll also come to hate the Coal Crushers that appear in most screens — they are totally unpredictable, except for the fact that you can assure yourself that whenever you decide to walk under them you'll be crushed! Another nice feature is the *Antics*-like technique of being able to change events by doing certain things; carrying certain objects around with you makes various walls disappear when you enter the screen, allowing you to explore still more of the caverns.

The program has a number of slightly off-putting characteristics which don't enhance its playability — for example: the graphics routine allows you to stand on any INKed pixel; you can get Monty actually standing in a graphic and still not have the fact that you've collected it registered; and if you die in a room having just caused a wall to disappear, that wall will appear with your new life and there's no way you can get past it!

Despite all this though, I still thought *Monty Mole* the most challenging of the three — even though it's the most blatant clone of Matthew's *Manic Miner*. YS

HACKER'S GUIDE

Codebuster* Dave Nicholls *examines the major problems experienced by designers of the ever-popular 'platform' games, discussing the methods of program storage that make this kind of multi-screen adventure possible in just 48K.

Ever since Matthew Smith first let his 'manic' imagination run away with both him and his assembler, a large percentage of the games produced for the Spectrum have been of the 'platform' variety. This presents two major problems for programmers wishing to emulate the jet-setters of the software industry. The first and most obvious is how to design one original screen, let alone the 20 or more that will be needed to satiate the needs of today's buying public! The second problem, and one to which I personally find the solutions much more interesting, is that once you've designed your screens, you've got to find a way of squeezing them — along with the rest of the data and the code to use them — into just 48K!

CODE CONCERN?

Before I explain the way in which *Frank N Stein, Astronut* and *Monty Mole* solve this problem, there are a few other points to note concerning the construction of the games' code. First off, *Monty Mole* has to take my prize for being the most untidily coded piece of software that I've seen for ages — several routines are duplicated (one is even triplicated!) and many's the gap you'll find between the routines. I realise that when you're putting a game together there's a great temptation to leave in the routines you tested it with, but a good assembler (I use OCP's full screen one, incidentally) makes the job of linking all the bits and pieces quite simple and the saving in loading time can be considerable. On the plus side, *Monty Mole* has an interrupt handler that's set up to work properly with *any* peripherals. It also contains some very nice movement routines for the graphics characters (I think the Thumpers are great!).

Having said all that about *Monty Mole*, I must admit that in the sloppiness league *Astronut* comes a close second, with even bigger gaps between some of the routines and, the hacker's nightmare, self-modifying code! *Frank N Stein*, on the other hand, had me fooled for a while — it took me several minutes to realise that what I'd mistaken for incredibly inefficient coding was, in fact, the output from a Basic compiler. The compiler itself is still in memory with the game and, if you know where to look, can be taken out and used on its own — two programs for the price of one maybe?

Frank N Stein, incidentally, also has an interrupt handler that's been written separately in machine code and, like *Monty Mole*'s, can be used with all but the kitchen sink hanging out the back of your Speccy. My one gripe, however, is that the routine to handle the Kempston joystick only recognizes the straight left and right movements, and not the diagonals — but I soon got used to it.

WHAT'S IN STORE?

Returning to the storage methods I mentioned earlier, let me first emphasise that in all the games I've ever looked at, I've only really found two different way of compressing data — although like most other things to do with computing, there's always more than one variation on a theme.

The first method is to store information about each screen cursor position and use that to work out what should go on to the screen. In the case of *Monty Mole*, three bits are stored per position and these are used to pick one of eight attribute/pixel sets for display (including the blank one); this means that there can never be more than seven distinct platform shapes on each screen. This is also exactly the method used by Matthew Smith in *Manic Miner*. Overall, however, it's probably the most inefficient of the two methods for most cases because you have to store information about the empty parts of the screen as well as the rest.

The second method, used by *Astronut* and *Frank N Stein*, gets around this problem by only storing the sections of the screen that have something in them, ignoring all the empty areas. This is usually accomplished by storing the starting screen position and the length of each platform, and expanding it out as a loop. *Frank N Stein* does this by PEEKing the two values and then using them as the start and end parameters of a FOR . . . NEXT loop. Once all the red parts have been drawn in, the same procedure is followed for the slime, ice and other bits and bobs around the screen. *Astronut* varies its format because it has different types of platform — that is, some are one character high and some are two — so it reads in an extra value that tells it which routine to run to print the platform correctly; other than this though, both games work in the same way.

One obvious thing in all three games is that the moving graphics characters are added last of all, using extra data which normally consists of a start and end position for their travels, along with an initial start position. The exceptions to this are the graphics characters in *Astronut* whose movements aren't linear — for these a 'route' has to be calculated as well.

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For years science fiction films and futuristic novels have depicted an era when man and machine can communicate in perfect harmony. The reality, of course, is slightly different. While speech recognition has yet to be fully developed (ACT's latest Rascal notwithstanding), chip-based speech synthesis has been both mastered and available for several years. Until recently the computing power needed to produce human-sounding utterances was substantial. Now almost every home computer is capable of being equipped to talk back to its owner at a price that won't even break the average piggy bank.

SOUNDING OFF

When we speak we produce three distinctly different types of sound. The most obvious are the 'voiced' or vowel-type sounds; oo, ar, ee, and so on. These are produced by air from the lungs making the vocal cords vibrate. The frequency of this vibration determines which vowel sound we hear.

The second group is the unvoiced or 'fricative' sounds; ss, sh, t and ff. Here the air from the lungs rushes past the vocal cords without making them vibrate and the frequency produced is controlled by the positioning of the lips and tongue. Finally there's silence or, to be more precise, the minute gaps that occur within words (for example six, eight) where we change from voiced to unvoiced and *vice versa.*

FAKING IT

In order to generate speech-like sounds, the electronics designers generally go for one of two methods. The first — and until

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SWEET TALKER
Price £29.75
Cheetah Marketing
24 Ray Street
London WC1R 3DJ

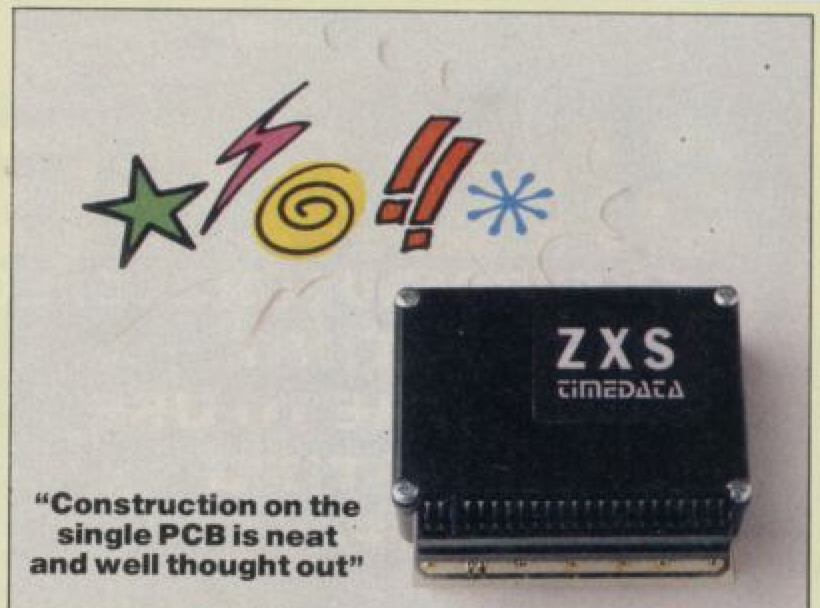
HARDWARE: Based on the by now familiar General Instruments allophone chip, this unit comes housed in a vertical box that measures 100mm by 75mm by 50mm.

Offering the benefits of an internal speaker (without volume control) and an expansion bus, Sweet Talker stays pretty much on a par with its rivals in terms of design; although it is well made and very neatly assembled on its single PCB.

SOFTWARE: This is the easy bit. Unlike the Currah MicroSpeech where the allophones are built up in strings (which is neat but consumes memory) the Sweet Talker simply uses numbers to generate the allophones. These can be stored as DATA statements ready assembled in word order, or you could build a list in alphabetical order sorted by position within a word. You can generate any of the allophones simply by keying OUT 7,n — where n is the allophone number.

MANUAL: It's virtually non-existent and the meagre four sides of A5 give you just the allophone list with some examples of how they would be used and that's about it. The tape includes a short demonstration which, according to the manual, "will explain precisely how to use it."

SUMMARY: The quality is as good as any other allophone-based synthesiser and the box does have the space-saving advantage of being vertically mounted.



"Construction on the single PCB is neat and well thought out"

ZXS SPEECH SYNTHESISER
Price £24.99
Timedata
16 Hemmells
Laindon
Essex SS15 6ED

HARDWARE: Physically this is the smallest of the review units at just 65mm by 70mm by 40mm. Housed in a vertically mounted 'potting' box it offers an expansion bus connector and uses the GI allophone chip.

The unit is too small to include a loudspeaker so a 3.5mm jack socket is provided for connection to an external amplifier and speaker. Construction on the single PCB is neat and well thought out.

SOFTWARE: Two programs are provided on the accompanying cassette, but the second one — a speech editor from the manual — stubbornly refused to perform, giving 'out of memory' errors when trying to RUN. The cause was an overdimensioned array, but it's a bug all the same.

You can access the allophones direct by using their codes and doing an OUT, or you can make use of the machine code subroutine provided and build strings of allophones in the reserved variable s$. In this respect the unit works in much the same way as Currah's MicroSpeech, but without the advantage of having the software built-in.

MANUAL: Twenty A5 pages cover the theory and practice of allophone synthesis and example programs are included as well as being supplied on tape.

SUMMARY: Although it's the cheapest of the bunch, the lack of an internal amplifier and speaker is a nuisance. With these added it would have been directly comparable to the Cheetah.



"The quality is as good as any other allophone-based synthesiser"

CURRAH MICROSPEECH
Price £29.95
Currah Computer Components Ltd
Graythorp Industrial Estate
Hartlepool
Cleveland

HARDWARE: Fitted into a neat, flat, black box (75mm by 75mm by 20mm) the unit is certainly designed economically. Just three chips from General Instruments and a handful of resistors and so on are assembled on to a very clean PCB. The standard Spectrum edge connector is fixed horizontally and there's no expansion port. The MicroSpeech will have to be the last unit you fit on the back of your Spectrum, but that's probably a small price to pay.

recently the most common — is synthesis by rule. If the frequencies contained within speech are analysed it's possible to devise a system of rules that allow us to re-create any sound from its basic frequencies.

These 'building blocks' of sound are called phonemes and by using them in various combinations any word can be constructed. The individuality of a human speaker tends to be lost when speech is generated like this but the words can be clearly understood. Because the synthesis rules for each phoneme are built into the equipment, the user has simply to supply a list of phonemes to be spoken. It's then possible to generate complete sentences instantly, simply by calling up a string of stored phoneme commands. In reality these phonemes tend to be called allophones; this is because the various building blocks sound different depending on their positioning within a word or phrase. However the principle's much the same.

The second method for generating speech relies on the fact that the human ear and brain are very good at filling in gaps. The speech we hear over a telephone line is (British Telecom permitting) perfectly understandable. Yet technically the quality — the range of frequencies we can hear — is only one-fifth of what we'd expect from a standard hi-fi system. We understand what's being said only because our brain does the job of filling in the gaps.

With the fall in cost of computer memory it's now possible to convert speech into digital information compressed many hundreds of times by a

The word is that attaching any old speech synthesiser to your Spectrum will allow you to have cosy chats together. Henry Budgett *determines whether this is one of the first signs of madness.*

This interesting design puts the Spectrum sound (including any speech) through your TV's loudspeaker — which makes a lot more sense than many of the other methods I've seen. To get the sound out there's one flying lead from the back of the MicroSpeech that goes to the EAR socket and another for the TV socket. (The new TV socket is fitted to the back of the unit.) You do, however, have to unplug the EAR lead when you want to LOAD a new program; perhaps another socket would have been better. A small 'trimmer' is fitted to allow the TV signal to be tuned in to produce the best combination of sound and picture and once set the MicroSpeech didn't need any further adjustment.

MicroSpeech uses the allophone system, with the added advantage that every keyword on the Spectrum can be voiced for you. 'Great for the blind', I thought, but then someone pointed out that it isn't a Braille keyboard . . . Anyway, you can turn the keyboard voicing off if it gets too much for you.

SOFTWARE: The MicroSpeech comes with a cassette that on one side offers a rather silly adventure game that speaks to you, and on the other a demo of the various facilities. Written in Basic, the demo is well worth a look if only to see how the 'professionals' construct their words from the allophone set.

When you're driving the device from your own programs the allophone strings are built up in a special string variable which is then automatically spoken. It may save a lot of memory to put the words you want into DATA statements as strings, rather than to store the actual strings themselves. Experimentation here is probably worthwhile if you've got a lot to say!

"This interesting design puts the Spectrum's sound through your TV's loudspeaker"



MANUAL: Neat, clear, well presented and very thorough! Need I say more?

SUMMARY: If you want to boost your Spectrum's sound output and fancy the idea of a speech synthesiser, then this has to be worth considering. The only possible complaint about it is the fact that it doesn't have an expansion connector.



"As an all-in-one unit it's probably quite good for the dedicated games enthusiast . . ."

FULLER BOX/ORATOR

Price £56.00
Fuller Micro
71 Dale Street
Liverpool

HARDWARE: Designed as much more than just a speech synthesiser, here is a unit that fits right across the back of the Spectrum and measures 235mm by 100mm by 40mm. Because the casing masks all the

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wonderful mathematical technique called Linear Predictive Coding. The resulting numbers representing the original speech are stored in a ROM. To get any of the stored words out again as speech is easy; we simply give the computer the address in memory of the word and the digital information is recovered and converted back into sound, and because the original speaker's words have been stored, all the personal characteristics remain. That's why Acorn's speech chips for the BBC Micro really *do* sound like Kenneth Baker.

WHAT'S THE USE?

The commercial uses for speech synthesis are so many and varied that it's just about impossible to list them all. Looking just at the tip of the iceberg it can be used to replace taped announcements at railway stations and airports; in America it's widely used on the telephone system to inform callers of misdialled numbers and engaged or withdrawn services. Speech synthesis units are also being incorporated into cars like Maestros and Montegos as part of the standard instrumentation so, as well as being something of a sales ploy, they can provide warnings the driver can hear without having to take his or her eyes off the road. A major contribution to road safety perhaps?

As far as we are concerned in the home computer and electronic games market, speech synthesis is generally used to enhance games. Scores can be read out and warnings of imminent enemy attack can be given to warn players leaving them free to concentrate on the tactics of the game. Of the five speech units under review here, four of them use the phoneme system and one the stored

SPECTRUM SPEAKERS



"For pure speech that's immediately understood, this wins hands down"

normal socketry at the rear of the Spectrum most sockets are duplicated on the back of the Fuller Box. I say 'most' because the TV aerial lead isn't; you've got to take the box apart to feed this through.

The inside of the box is, to be reasonably polite, a mess! The sound and speech chips are both standard socketed General Instruments devices, but the rest of the construction is a hotch-potch of extra wires and piggy-backed chips.

Still, as well as providing sound and speech the fully expanded Fuller Box also provides a BEEP amplifier with volume control, joystick port and an electronically switched LOAD/SAVE system — which means that you don't have to keep on unplugging the EAR lead while saving programs.

An extra 3.5mm jack socket has been installed at the back of the unit which isn't explained anywhere in the manual, but it turned out to be an extension speaker socket.

SOFTWARE: Activating the speech chip is just a matter of using the OUT statement to pass the relevant allophone number to the Orator. The chip contains 64 standard allophones, but quite why Fuller suggest you try a loop from one to 255 is a mystery.

Included are two demonstration programs; one covering the Box in general, the second dealing with the Orator. Listing the program is likely to provide rather more information than just listening to it! Imagine gets a posthumous plug for its software, some of which works with the Orator, I believe, and all their joystick games are compatible with the joystick system used by the Box.

MANUAL: It's the sort of paperwork that looks good at first sight but doesn't really tell you very much. If you want more details on the sound chip itself, try the official GI Data Sheet. The manual's explanation of allophones is quite good but fails to expand into real example. That's why it's a good idea to LIST the demo program.

SUMMARY: As an all-in-one unit it's probably quite good for the dedicated games enthusiast who likes the idea of tinkering with sounds and speech. As a speech unit in its own right, it's rather big and clumsy and nearly twice the price of its opposition.

S-PACK

Price £29.95
(Extra Word Packs £12.95 each)
DCP Microdevelopments
2 Station close
Lingwood
Norwich NR13 4AX

HARDWARE: Based on the National Semiconductor 'Digitalker' system this was the only review device to use compressed speech. In terms of producing intelligible utterances it wins hands down over all the rest but there are several reservations.

It comes housed in a 75mm by 110mm by 45mm plastic box and mounts horizontally behind the Spectrum. In its favour is the provision of an expansion bus connector but, unfortunately, the rest of the construction is fairly low-grade. Inside are two PCBs, one providing the bus and the other the speech synthesis components. An internal speaker is provided along with a 3.5mm jack socket to connect the device to a larger external speaker. The volume control is an edgewise potentiometer, in my view a cheap and nasty approach.

The speech chips are all socketed and there's provision for installing four vocabulary ROMs ... our review model had all four fitted. When I first tested a Digitalker system some three years ago these were the standard chips. Although the price has fallen dramatically (the experimenter kit was then about £130 with two vocabulary ROMs), the repertoire hasn't. It may be worth contacting National Semiconductor direct to see what else it can offer (UK offices are in Bedford).

The speech quality from this unit is excellent. It's easy to hear that the log-on message "This is Digitalker" is spoken by an American female and the rest of the words in the first two ROMs are spoken by an American male. I'm also pretty sure that there are two other people speaking on the second pair of ROMs, which is an indication of the sort of information a digitised speech system contains that you don't get from an allophone system.

SOFTWARE: Er, there isn't any! You just OUT the required word number to the appropriate port and the device says it.

MANUAL: Not a lot of use, I'm afraid. The four A5 sides tell you how to use the thing, but miss out on all sorts of interesting details. Your best move is to get the National Semiconductor data sheets (usually free) and find out from them how to string words together, get parts of words and a whole lot more besides.

SUMMARY: For pure speech that's immediately understandable this wins hand down. On the other hand you may want words that aren't in its vocabulary and, as it stands, there's no way to make them. Therefore, it's main use would be in a dedicated system announcing times and other numeric data — it's not much good for games and so on.

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SPECTRUM SPEAKERS

speech method. Let's take a look at how they succeed in fulfilling their purpose.

SUMMARY

If you're looking for a means of adding a voice to your Spectrum and of incorporating the facility either into games or just for fun, then the Currah MicroSpeech is almost certainly going to be the best buy for you. It's also got the largest number of games already written for it if you prefer to use shop-bought software. Another of its clear advantages over the other units is the addition of a BEEP amplifier for putting the sound through the TV.

For those of you who haven't yet bought a joystick controller or a sound generator and fancy a speech synthesiser at the same time, then the Fuller Box/Orator combination — though expensive — offers the lot in one package.

Serious users of speech output have an equally clear-cut choice. The superior quality offered by the DCP S-Pack's Digitalker chips make this the logical buy for anyone using the Spectrum as an annunciator rather than as a games machine. The manuals supplied aren't good enough by far, but the Digitalker chips are more versatile than you might think, so if you buy this one get in touch with National Semiconductor for the real data.

Of the remaining two units, the Cheetah offers a built-in amplifier and speaker whereas the Timedata unit doesn't; their respective prices reflect this. Neither of them comes close to the overall 'usableness' of the MicroSpeech and they both lack the BEEP amplifier and keyword voicing. MS

SPEAKER COMPARISON CHART

SYNTHESISERS	Currah MicroSpeech	Fuller Box/Orator	DCP S-Pack	Timedata ZXS	Cheetah Sweet Talker
FEATURES					
Synthesis type	Allophone	Allophone	Compressed speech	Allophone	Allophone
Allophone coding	String	Numbers	Numbers	String/Numbers	Numbers
Keyword voicing	Yes	No	No	No	No
Internal amplifier	Uses TV	Yes	Yes	No	Yes
Internal speaker	Uses TV	Yes	Yes	No	Yes
BEEP amplifier	Yes	Yes	No	No	No
Volume control	Uses TV	Yes	Yes	No	No
Demonstration tape	Yes	Yes	No	Yes	Yes
Software provided	In ROM	No	No	On tape	No
Games available	Yes	Yes	No	No	No
PHYSICAL NOTES					
Size (in mm)	75 by 75 by 28	235 by 100 by 48	75 by 110 by 45	65 by 78 by 40	110 by 75 by 50
Format	Horizontal	Horizontal	Horizontal	Upright	Upright
Case material	Plastic	Plastic	Plastic	Plastic	Plastic
Expansion bus	No	Yes	Yes	Yes	Yes

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DPOKE double poke
EDIT specified line
ELSE (used with IF ... THEN)
EXIT leave DO-LOOP
FILL enclosed area with specified ink or paper
GET wait for keypress
JOIN two program lines
KEYIN a string
KEYWORDS new keywords on/off
LIST/LLIST line TO line
USED (used with GOTO, GOSUB)
ON ERROR trap errors (with LINE, STAT and ERROR)
PLOT a string (may contain cursor control codes)
POKE a string
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SPLIT program lines
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USING used with PRINT
WHILE used with DO or LOOP
XOS, YOS move PLOT origin
XRG, YRG change PLOT scale

FUNCTIONS

AND (bit-by-bit)
BIN$ decimal to binary
CHAR$ number to 2 characters
COSE fast cosine
DEC hexadecimal to decimal
DPEEK double PEEK
FILLED filled area
HEX$ decimal to hexadecimal
INSTRING string search
MEM free memory
MEMORY$ all of memory as a string
MOD modules
NUMBER 2 characters to number
OR (bit-by-bit)
RNDM fast RND
SCRN$ recognises user graphics
SINE fast sine
STRING$ repeats strings
TIME$ current time
USING$ formats numbers
XOR (bit-by-bit)

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Morse Tutor (£4 cassette)
This one has it all! 4-19 words/minute, variable spacing, variable number of groups of random letters, numbers or mixed, random sentences, own message, single characters (including punctuation), variable pitch FEEDBACK via screen, printer or SPEECH (phonetic alphabet via Currah u-Speech on 48K version only), and repeat facility. Takes you to and beyond RYA and Amateur Radio receiving standards. 16K and 48K versions on one cassette, 48K only on Microdrive cartridge.

Spectrum Programs on Microdrive

All the above are available on Microdrive cartridges at a price of £4.50 for one cartridge + the price of each program as shown above, e.g. a cartridge with Tradewind and Morse Tutor would be £13.50. As a BONUS, Gavin Monk's Indexed Loader is included FREE with each cartridge.
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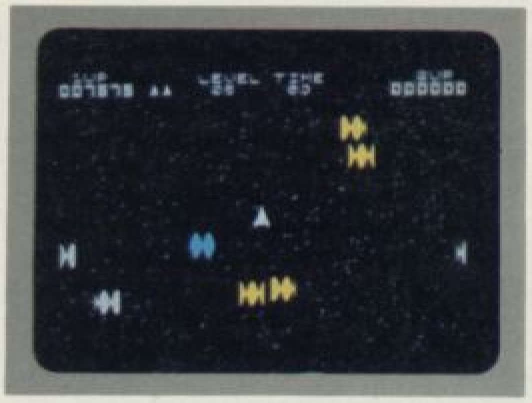
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JOYSTICK JURY

Success in the charts doesn't always mean it's the best game around. Check out the thoughts of our jury this month — Ron Smith, Roger Willis and David Lester — and you'll see what we mean ...



HYPERBLASTER

Lothlorien/£5.95

Roger: Get ready for a thoroughly hyper-yawn experience, because this is nothing but a down-market and down-wind re-work of that lounge bar favourite of yesteryear, *Asteroids.* Read and then instantly forget the fantasy blurb on the cassette liner, as the game's got virtually nothing to do with "hi-tech galaxy surveillance craft".

If there's anyone left in this universe who isn't familiar with the game format, then tough — I'm not about to bore you all by describing it. It's enough to say that for the sake of 'originality', the victims of player aggression have been named 'Deltanoids'. Their spherical appearance and painful manners, which are alleged to become "more brutal and devious" as infantile skill level rises, should really have attracted the seminal title for games of this ilk, which has to be *Heamorroids.*

And if you haven't got it yet, let's just say this one's guaranteed to give you a meaningful pain in the bottom — especially if you've clawed yourself up to a respectable height on the evolutionary ladder. *1/5* **MISS**

Ron: I thought we killed off *Asteroid* lookalikes sometime in the dark ages of computing. Will software houses never learn that you can't lump together *Asteroids* and *Arcadia* and get away with it! *1/5* **MISS**

David: A pretty good version of *Asteroids,* but then I'm sure we've all got at least one copy somewhere at home. The graphics get more interesting as you progress the levels. *3/5* **HIT**



PI IN 'ERE

Automata/£6.00

David: The tedious scenario for this arcade game casts you as a miniaturised BURT inside a computer. Your mission? To track down the 'Big Bug', by tunnelling through RAM and collecting various items along the way. And if you think that sounds like an original idea, I don't know where you've been for the last few months.

The graphics are very reminiscent of *Pi-Balled*'s characters, and are both colourful and well-animated. The game's actually quite difficult to succeed at, especially when you're creating new tunnels knowing that there's a band of nasties on your tail. I must admit though, that it didn't inspire the 'just one more go then ...' feeling that should come with a good game. On the other hand, it's a reasonable version of its kind and is well supported by good graphics and sound. While it does have a Kempston joystick option, I found it too unresponsive to be useful and ended up back at the keyboard.

This game certainly won't stun the computer world by leaping up the charts — but it should be a success among Piman fans. *3/5* **MISS**

Ron: The title does nothing to suggest that this is nothing but a *Mr Do!* rip-off ... but so what. The game's great fun, and it's certainly my tip for the top. *4/5* **HIT**

Roger: At last — an arcade game that requires some detailed strategic planning. Automata's Piman games do have a tendancy to be a bit similar but, having said that, it's quite difficult to play. *3/5* **HIT**



FULL THROTTLE

Micromega/£6.95

Roger: As a long-standing motorcycle fetishist, *Full Throttle*'s simulator promises were fatally attractive to me and it absorbed far more of my time than I originally planned — however, I couldn't help having one or two misgivings.

Program content initially exudes Grand Prix bike racing authenticity; the player is offered a menu of 10 of the greatest Grand Prix circuits in Europe. Throttle, brakes and steering all function in an apparently realistic way — the 'racing line' you take through the corners is critical to speed — but complete control is difficult on the keyboard. The 3D graphics are fairly good but, comprimised by a lumpy horizon, each track has a habit of looking the same. Worse still, an absence of visual reference make 'learning' each circuit almost impossible, so anticipation is seriously limited; just naming the corners of each circuit would have helped.

Unfortunately, the whole thing crumbles into arcadia when the player gets fast enough in the saddle to ride with the pack. The other 40 riders hop about like a bunch of idiots ... and bang goes the realism. Aspirant Barry Sheenes will bite Sinclair's finest with abject frustration as the opposition crank through the turns without ever crashing. *4/5* **HIT**

Ron: I found this game quite impossible to play — the only way I got to race with the rest of the pack was to let them lap me. *2/5* **HIT**

David: It's not the most colourful game I've seen, but it's certainly the best bike-racing game by far. Impressive 3D bikes and a selection of race tracks made this a winner! *4/5* **HIT**



ALCATRAZ HARRY

Mastertronic/£1.99

Ron: Imprisoned in Alcatraz, it's up to Harry to search for and steal some secret files which've been stored in an underground vault and, once found, he must escape through a hole in one of the fences.

Now all this seems pretty simple until you see a grid map of the prison layout, which shows the 144 different locations in which the files could be hidden. To make sure that you visit most of them, it's necessary to search for 30 items of escape equipment as well. This done Harry must be helped back to the compound and begin his walk across the minefield to safety beyond the electrified fence.

This is no easy game to complete, but with only average use of colour, flickering repetitive graphics and a fairly slow playing speed, it's unlikely anyone would want to. However, to its credit, there are some fun locations to visit; for instance, go past certain guards too many times and you'll be arrested for loitering and have your head blown off — violent stuff, but done with humour. Definitely reasonable value for the price that's being asked. *2/5* **MISS**

David: It's a shame Mastertronic's machine code programmers were out to lunch when this one got away. Thus, play is fairly slow and tedious. *2/5* **MISS**

Roger: This one's a curious mixture of arcade and adventure action, but overall I'd say Harry deserved to stay incarcerated. I think some thrilling text might have made it better. *4/5* **MISS**

IAN McKINNELL



BC BILL

Imagine-Bo Jolly/£5.50

Roger: The fallen empire of Imagine Software bears guilt for *BC Bill*'s creation; Imagine may be 'the name of the game', like it says on the packet, but whoever wrote this didn't exactly apply a vast amount of imagination to this sample of Stone Age programming. Maybe everyone was too busy winding up the company to notice what the programmers were doing ...

The game is essentially lightweight stuff involving a primitive character who looks and behaves like your average Liverpool or Everton supporter — probably Imagine's way of introducing a little local colour. Bill, under player control, has to scuttle about a primeval landscape, clubbing wives and collecting food, before dragging the goodies back to his cave. An ever-increasing number of children, resulting from the collected and nourished wives, complicate matters as do the carnivorous (news to me!) dinosaurs dropping in for lunch.

Well, it's obvious it's going to be a success — everyone loves a good old dinosaur ... you only have to see how many people settle down to watch that load of old tott *One Million Years BC* each time the BBC repeat it. For me though, there wasn't enough going on — I spent the first few games just trying to find another screen (having got bored with the first fairly quickly); needless to say there isn't one — equally needless to say, it needs one. *3/5* **HIT**

David: Sexism to the fore in this strange little Stone Age scenario. It'll be a sure-fire hit — nice graphics and excellent sound help — but the initial attraction soon wanes. *4/5* **HIT**

Ron: What a load of sexist nonsense — great graphics, but the storyline stinks. Personally, I wouldn't give it house-room. *3/5* **HIT**



HUMPTY DUMPTY MEETS THE FUZZY WUZZIES

Artic/£6.95

Ron: This is a maze game with a difference, although you'd never guess it from the title or the silly picture on the cassette insert. It's all about helping Humpty escape from his enemies, the Fuzzy Wuzzies (who're responsible for all the bombs) and the Deadly Snappers.

The game's twist is that instead of having control of our egg-shaped hero, you get to direct the movement of the maze itself. The reason for this is that not only does Humpty look like a rugby ball, but he also behaves like one. He sits lifeless until the maze is turned through 90 degrees, whereupon he tumbles downward by the force of gravity. Only when an object is encountered or the Fuzzy Wuzzies get in the way, does Humpty actually come to rest again. There are 18 mazes in all, complete with teleports to help poor ol' Humpty out of the stickiest of situations.

While the use of the rotating maze is interesting, in play it tends to be very disorientating — especially as it disappears momentarily each time it's rotated. However, the overall display make use of clearly defined graphics and pleasant use of colour. Best of all though is the speed. *3/5* **HIT**

David: Despite the age-old theme, this maze game is different enough to warrant attention. The graphics and sound are good, although there's a distinct lack of addicitiveness. *3/5* **HIT**

Roger: Who dreams these things up? The title's enough to put anyone off — which is a shame because it's really a very good game. I'm not too sure if it'll reach the charts . . . *4/5* **MISS**



THE PERILS OF BEAR GEORGE

Cheetahsoft/£6.95

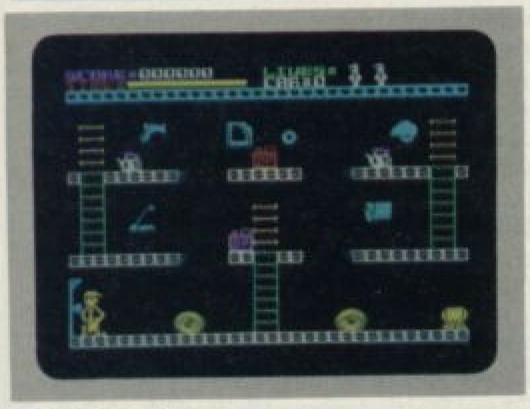
David: Believe it or not, the idea behind this game is to eat as many apples as possible, so that you can build up enough fat to last out the Winter in hibernation. For those of you, like me, expecting a game based on *Boy* George, you're going to be disappointed!

The first (of three) screens shows the bear in an orchard, waiting with mouth agape for some apples to fall from the trees. It's not that difficult — the only thing that can hurt you is a magenta-coloured apple falling on your head and knocking you out for a few seconds. Then, after three types of apple have been consumed, you automatically move to the ski-piste (?) and have to manoeuvre Bear George to his cave while avoiding the skiers. Once at the mouth of the cave, the scene changes again and it's now your task to walk along the bottom of the cave without touching the spiders who've attached themselves to the ceiling to block your path. When you reach your bed, there's a couple of seconds rest for Winter (yawn) and it's back to the beginning again.

Although the animation and graphics are superb, and the sound well above average too, there's little addictiveness to this at all — I found it far too easy. Nevertheless, this could be a commercial success. *2/5* **HIT**

Ron: *Bear George* is a really odd game. I haven't quite got the hang of the storyline yet — I refuse to believe it's that simple — but the graphics and sound are above average. *3/5* **HIT**

Roger: The thought of a game in which you've to force-feed a bear with over-ripe apples in a two-minute binge before hibernation suggests a crafty call to the RSPCA. Overall, one of the most unrealistic games I've seen. *1/5* **MISS**



AUTOMANIA

Mikro Gen/£6.95

Ron: Wally, the manic mechanic, has got to build 10 cars. What could be simpler? Well, after playing this game for a while, the answer's got to be 'just about anything!'

Wally's first job us to go along to the stores and collect the first part he needs — however, this is no ordinary storeroom. Most of the spare parts have taken on a life of their own, rolling about menacingly (if you can call a gentle rolling movement 'menacing' that is). Anyway, avoiding these, Wally must climb the ladders and jump across holes in the crumbling floors until he finds the part he's looking for; once he's got it, it's back to where he started. Thus, the game continues until the first car's built ... and then it's on to the next car. Whew!

The theme's original (although jumping over moving objects and climbing ladders certainly isn't!) and graphics, colour and speed are all used to good advantage. The presentation and execution of the game are excellent. *4/5* **HIT**

David: The graphics in this game are quite superb, which is a shame because the game isn't. Basically just another 'climb the ladder' game, I'm look forward to the sequel. *4/5* **HIT**

Roger: As games go, this ain't bad at all. Shame they called the hero of the game Wally, as that's exactly how he acted with me at the controls! I'd give it the thumbs up ... *5/5* **HIT**

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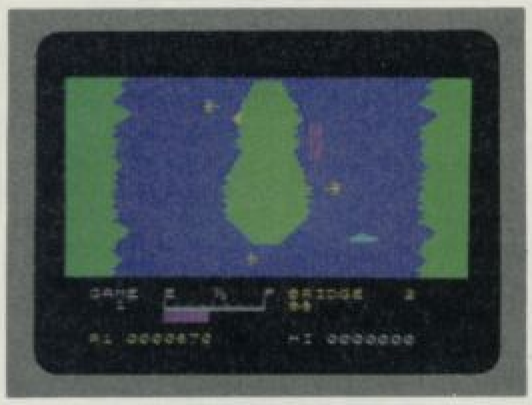
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JOYSTICK JURY



RIVER RAID
Activision/£7.99

David: The idea of this game's pretty similar to a number of others I've seen over the last year, most notably *Blue Max* for the Atari.

You have to guide a jet plane up a river, banked on both sides by steep cliffs, shooting enemy planes, helicopters, ships and missiles that get in your way. Refuelling posts appear every now and then but these get fewer and further apart as you progress through the levels.

The graphics are quite smooth, but their quality's not so wonderful when you really push your foot down (or whatever you do in planes) — migraine sufferers watch out. Having said that though, you hardly need the graphics quality of *Sabre Wulf* to produce a good game, and *River Raid*'s certainly a good, addictive game. The game's both colourful and attractive to look at, and includes a good selection of start-up options.

I must admit I was expecting something a little better from a company like Activision — but then again, the game's addictiveness is certainly a strong point in its favour. It's just a shame it's a little let down by the quality of the sound and graphics. *3/5* **MISS**

Ron: *River Raid* is a pretty basic game to be honest — I didn't think the graphics were up to much — but it was certainly addictive enough. *2/5* **HIT**

Roger: Once I've played this game 23 times in a row, I'd got a list of criticisms as long as my arm. But then again, who cares if the game turns out to be that addictive? *3/5* **HIT**



CRUSOE
Automata/£6.00

Roger: Like most well-written adventure programs, *Crusoe* gives the impression of literacy and intelligence to the humble ZX Speccy and, as someone who badly needs his severely flagging ego flattered by any means possible, I have to admit enjoying this desert island experience.

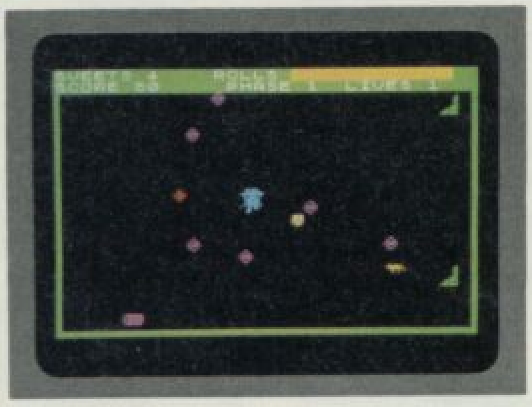
Screen format includes both a parchment logbook and one of a number of maps charting the castaway's position. The action involves shuffling the poor old soul round the island, feeding and watering him when required, and looking for all the available 'finds' to assist his survival. Apart from not letting him starve to death, the player also has to steer him around a selection of static and mobile hazards, as well as correctly answering his questions; he even responds in a like manner to unprintable abuse!

Gradually, his well-being improves and his lifestyle becomes more civilised — but how on earth do you get to find Man Friday? Well, he can stay in the undergrowth for all I care!

The complications, vaguely intellectual demands on the player and wittily detailed graphics, are at the core of *Crusoe*'s ability to amuse. *4/5* **HIT**

David: Jerky graphics and poor sound did not endear me to this desert island disaster — all the elements are there . . . it just doesn't quite work. *2/5* **MISS**

Ron: Well, I'm not quite sure what the idea of the game really is, but I spent ages trying to find the mysterious Man Friday. Has anyone out there found him yet? *3/5* **HIT**



MADHATTER
Gamma Software/£5.50

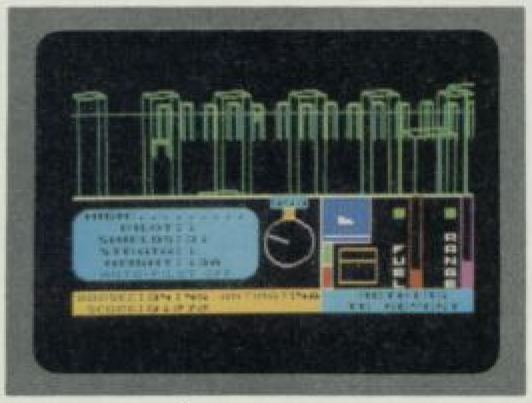
David: In this game, you play the part of the Mad Hatter from *Alice in Wonderland* who, you surely remember, is having a tea-party to celebrate his un-birthday ... but that's where the connection ends, I'm afraid.

Your task is to collect sweets and chocolate rolls from around the screen, which itself consists of very unexciting graphics; the vacuum cleaners are very shabbily defined and the mice, etc, are such grim programming specimens as to be almost unrecognisable. Moving your character square around the screen, you move into stationary and moving blobs, whilst avoiding others. The only difficult thing is getting out of the way of the baddies — difficult only because they go from side to side at silly speeds.

At first the game seems quite tricky, but soon becomes simplistic. I was looking forward to seeing some screen variations but I was disappointed. With graphics as poor as these, and no sound or variation to speak of, this game will be played once and once only. I remember games like this having trouble on the market when the Spectrum was released two years or so ago! *1/5* **MISS**

Roger: Preparations for parties that demand attention to sweets, chocolate rolls, mice and vacuum cleaners may be your cup of tea — but for me, it's not mad enough by half.
It's got to be a miss. *1/5* **MISS**

Ron: *Madhatter* lacks the professionalism we've come to expect from Spectrum software — it's too fast and block graphics just aren't on anymore. Pretty much a boring game, I'm afraid.
It's a miss! *2/5* **MISS**



TERRAHAWKS
CRL/£6.95

David: This is the game of the TV series — which should guarantee it being a chart-topper. I wonder if it's any good? Or even whether that'll matter . . .

The idea behind the game is to break out of a black hole by way of a vortex, which you must enter at a certain height, if and when you find it. To help in your quest, you've a radar screen, compass and range detector.

The start of the game is actually quite impressive, with lots of scrolling titles and tunes being played . . . but the myth soon evaporates. The screen fills with a number of 3D rectangles — which I seem to remember being impressively termed 'huge green monolliths' — which are dead easy to fly around, shoot up or whatever else you want to do to them. No problem! But of the vortex, I found no trace — so that's what makes this game so difficult!

I enjoyed the game for the first few moments, but when my fuel ran out after about 15 minutes, I wasn't that eager to start all over again. The instructions gave no indication of how to find the vortex and this is far from clear from the game itself. This might be a very good game — *if* you can work out what's going on before you get bored. *2/5* **HIT**

Ron: The idea probably sounded great on paper . . . but CRL haven't pulled it off too well. The only part of the game worth seeing is the opening sequence of stars rushing past, over which the player has no control at all. The rest wasn't up to much either. *2/5* **MISS**

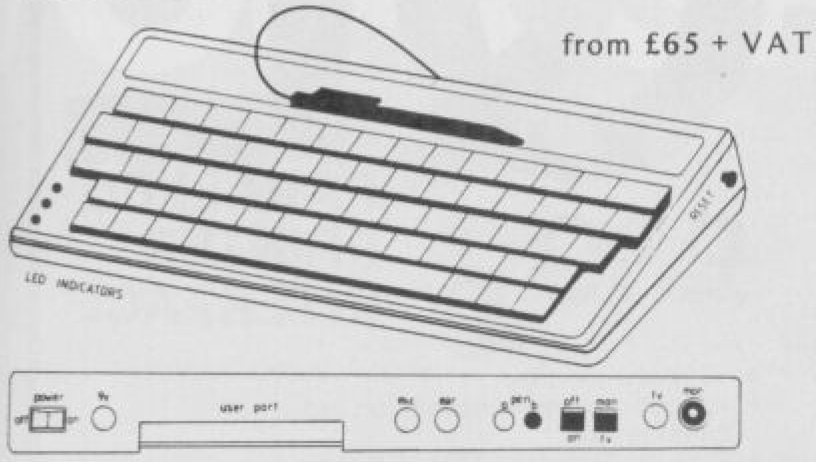
Roger: I always did my jolly best to avoid that hideous TV puppet show — and it's a shame that I had to sit through the computer game! I guess it'll be a success, but who'd have thought the game could be even worse than the TV show? *2/5* **HIT**

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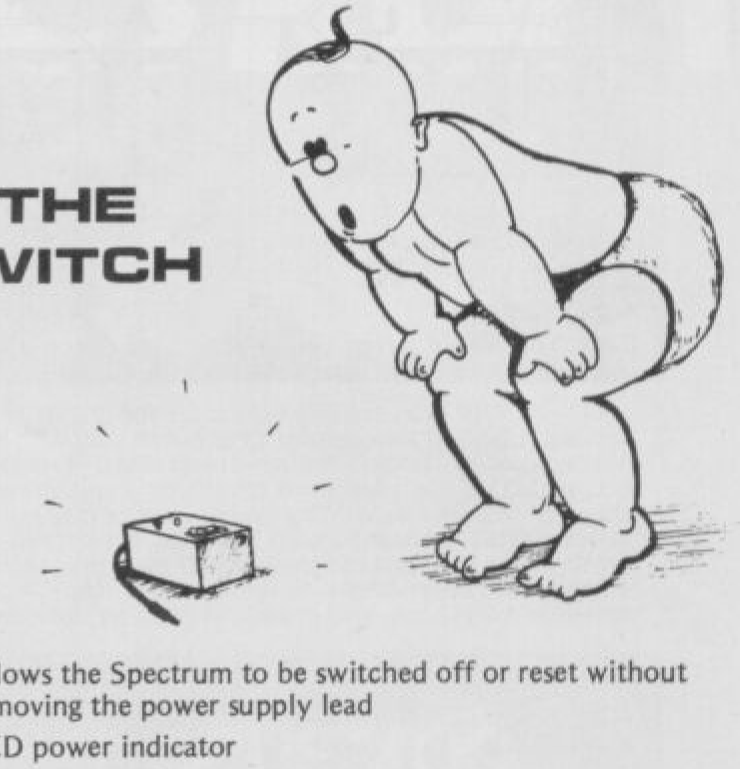
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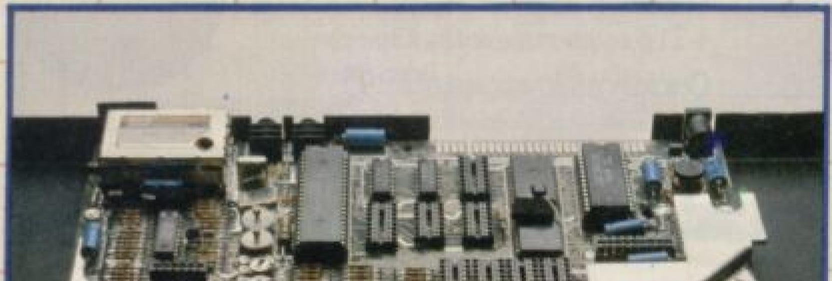
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YS 11 84

DOUBLE TROUBLE

If you're having problems with any aspect of Spectrum hardware/software, let* Ian Beardsmore *come to your rescue. Write to him c/o Spectrolysis,* Your Spectrum, *14 Rathbone Place, London W1P 1DE.

Some interesting letters have been coming in this month. Here's one from **Martin Howell** of Euxton, Chorley in Lancashire on the subject of the Double Standards piece in *YS* issue 3.

'You appear to be having problems with full duplex working — though you don't quite say so in the article. I suggest you try the following (by the way I'm using an Issue 2 Spectrum, Interface 1 and EP44).

Ignore lines 9997-9, which are just for completeness. Line 30 is to get rid of the annoying flashing border, line 50 stops the Speccy running away with itself and line 60 uses STOP to get out. Line 70 stops invalid characters; (I'll deal with line 80 later) and line 90 allows upper case.

You may recognise bits and pieces of programs from Andy Pennell's book, *Mastering Your ZX Microdrive,* though they're now much modified. Back to line 80; this will in fact overcome a bug in Andy's book, that is the BREAK inconsistency. To get a space you must use both shift keys, or the program halts at line 110.

```
   1 REM INKEY$,INKEY$£, PRINT & LPRINT ? M.R.How
ell 5/84
  10 FORMAT "b";300
  20 OPEN £4;"b"
  30 POKE 23750,7
  40 LET a$=INKEY$
  50 IF INKEY$<>"" THEN  GO TO 50
  60 IF a$=CHR$ 226 THEN  CLOSE £4: STOP
  70 IF a$>CHR$ 127 THEN  GO TO 40
  80 IF a$=CHR$ 14 THEN  LET a$=CHR$ 32
  90 IF a$=CHR$ 6 THEN  POKE 23658,8-PEEK 23658:
GO TO 40
 100 PRINT £4;a$;: PRINT a$;
 110 LET b$=INKEY$£4
 120 IF b$="" THEN  GO TO 40
 130 PRINT b$;: PRINT £4;b$;
 140 GO TO 40
9997 STOP : SAVE "INKEY$,INKEY$£4, PRINT &  LPRIN
T ": REM Tape recorder
9998 STOP : SAVE *"m";1;"INKEY$,INKEY$£4, PRINT &
  LPRINT ": REM Tape recorder
9999 STOP : FORMAT "t";300: OPEN £3;"t": POKE 237
50,7: LLIST : CLOSE £3
```

Written by *YS* reader Martin Howell, this routine attempts to carry out duplexing ... strictly speaking, though, it's really only half-duplexing!

I also seem to have found another bug, either in the Speccy itself, or the Interface 1 (I'm still awaiting a reply from Uncle Sir Clive). When sending to the Speccy from a terminal via the RS232, odd characters are corrupted, typically one in eight. It happens even when using Sinclair Research's own program on page 37 of the handbook; I've tried other devices besides the EP44 — not to mention another Interface 1 — all with the same result.'

I actually had three versions of duplexing, sent in by readers, but the one from Martin Howell was by far the neatest and the most adaptable which is why I've included it — even if it is wrong! Actually he answers the question about the 'bug' himself but the routine is not duplexing, it's half duplexing! Duplexing is the simultaneous transmission and reception of data. The most important word being simultaneous. As far as I know, the Speccy has only one processor and that's capable of doing only one thing at a time.

With Interface 1 connected, data is stored in an RS232 buffer, from where it can be moved either into the memory or out along the TX line into the wild blue yonder. However, if you're trying to do this at the same time as taking data into the buffer from the RX line, then you're bound to get into trouble. The same is true if you try and work things the other way round — as you've found with your one over the eight corruption. I suppose it might be an interesting way of writing secret code, but otherwise it's very annoying.

To get round this you'll have to look at lowering the CTS line and thus try to switch from RX to TX without corruption. While CTS is high the computer will send data. However, if you lower it, make sure that the equipment you're talking to recognises it for what it is. As for anyone thinking of being clever and using the DTR line, well, normally that could be a good idea. Unfortunately, there's an inherent assumption in this that the Speccy is in some way 'normal' — which it isn't. If the DTR line is lowered, the Speccy will chase its own tail in a loop, *ad infinitum*, or at least until you pull the plug. Well, it would be boring if things were too easy.

ALPHACOM LOCK-UP

Mr T Jennings of Ashton, Bristol uses an Interface 1 on his Speccy and since his ZX Printer died at the tender age of 13 months he's been hitching up to an Alphacom 32. Unfortunately he seems to be getting Issue 3 type problems. Besides the keyboard locking up when Tasword or Spectext is used with the Interface 1 and printer, the IN command fails to return a uniform value under apparently identical conditions. The automatic answer to this is the Issue 3 IN command problem. The only flaw in this fine theory is that the machine in question is an issue 2!

The most likely cause is that a decoding chip has gone haywire. Of course, there could be a bug at the Alphacom end of things, but it would be the only example of this I've come across to date. I'm also assuming that you haven't sent your Spectrum back to Sinclair Research to have a fault repaired at some time, and if you have that you've checked that it's still an Issue 2. It's by no means unknown for someone to get a different computer back from the merry men at Camberley.

Certainly with the demise of the ZX Printer the Alphacom becomes a credible alternative. If the machine is a genuine unadulterated Issue 2, then the first move is to take steps to have the various chips in the system checked to see if they're all up to scratch. For that I would suggest contacting TV Services of Cambridge on (0223) 358366.

THE RIGHT TYPE

David Lester is another to have discovered the power of the Speccy/Interface 1/*Tasword*/EP44 system. He makes the point that it's all very well for Sinclair Research to say that most printers are RS232 (and thus Interface 1) compatible but many of them don't have an RS232 on-board; that comes as a usually rather expensive extra. On the EP44 however, the RS232 port is standard.

David reckons the print quality is as good as most daisywheels (I'm not sure about that), but he's correct to say that the Brother is well up to general correspondence standard. Where the Brother falls down in comparison to proper daisywheel devices is speed. The baud rate must be 75 or 110. The Brother works at about 16cps — anything faster and it simply cannot print the incoming data fast enough.

Of course another of the Brother's great advantages is that you can use it as just an electronic typewriter. Another plus is its on-board modem which allows the downloading of typed text into the Speccy. You can even dump text from the Brother's memory into *Tasword.* One disadvantage is the absence of dot graphics — so you can forget screen dumps. Also be careful about mode selection — there's the recurring problem of the '£' sign being in the font as a replacement for the hash. This might hinder printing out programs where the pound sign is used anywhere.

Tasword is a superb program and the foresight of the company to make it accessible to the user has only widened its range.

Several people have written eulogies on this system and others have written in for more details, particularly regarding wiring it up. Fortunately, two people have supplied the necessary info ... and here it is... YS

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ZX INTERFACE 1	EP44
9	25
2	2
3	3
4	20
5	5
7	7

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■ 48K Spectrum, Interface 1, Microdrive, nine cartridges, Alphacom 32 printer, Kempston Joystick Interface, sound amplifier and software. Quick sell, £280 ono. Tel. 0823 75615. Ask for Mr Kwong. After 6 pm.

■ ZX Printer + 4 rolls printer paper. £30 phone 0702 79737.

■ Currah MicroSpeech £20. ZX Printer plus power supply £30. Three-channel sound generator and joystick board £15. Tel. 01-769 0588 (Glyn).

■ Swop my Currah MicroSpeech, as new, for a Sinclair printer. Also swop *Circus Adventure* for Level 9's *Snowball Adventure*. Andrew Hedges, 17 Parkwall Crescent, Warmley Tower, Bristol BS15 5HP.

■ Rotronics Travel case for Spectrum. 35cm x 70cm, lock and key. Cost £40, sell for £22. Will swop for an RD digital plotter. Tel. Doncaster 883794 (Mike).

■ Swop Speccy 48K, cassette, software + mags worth £250 for CBM64 or sell for £180. Speccy still under guarantee. Tel. 01-801 8938. Will collect.

■ 48K Spectrum, 3 months old plus programmable joystick interface and £50 of original software, including *Pacman, Kong, Pool, Asteroids* and many others. Worth £230, sell for £170 ono. Tel. Newmarket 664557.

■ Swop Currah MicroSpeech for Fuller Sound Box or similar item. Otherwise will sell for £25. Mr CA Purcell, 14 Cathkin View, Carmyle, Glasgow G32 8AF.

■ Swop ZX Printer, Currah MicroSpeech and £70 worth of games for Interface 1. Games include: *Sabre Wulf, Moon Alert, Trashman*. Tel. (0272) 878966. 36 Highdale Avenue, Clevedon, Avon BS21 7LT.

■ Swop Atari VCS with 5 cartridges for Interface 1 and Microdrive. ZX Printer wanted for Downsway Programmable Joystick Interface and *The Chess Player*. Ring Andrew on 0253 733706 8pm-9pm.

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■ Two SweetTalkers. Excellent condition in original boxes for Spectrum. Never used. Send £23 (each) to 50 Elm Park Road, Havant, Hants PO9 2AD. They come with full instructions and tape.

■ ZX Printer paper. 4 rolls £6.00. Can be used with Speccy or ZX81 (excuse the language). Tel. 01-593 5056 for further details.

■ Protek Joystick Interface for sale, uses cursor keys, want £8. KH Lau, 1 Fielden Grove, Headington, Oxford OX3 0DU.

■ Kempston Joystick and Interface plus conversion tape one, £12. Tel. Mellis 350 evenings.

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SOFTWARE

■ Willing to swop *Ocean Kong* for Software Projects', *Jet Set Willy*. Very good condition. Stuart Smith (0555) 71911.

■ Will swop *Stonkers, Black Crystal, Apocalypse, 1984, Go To Jail, Spectapede, Zipper Flipper*. Phone Newcastle 617656 or write to 2b Kelvin Street, Maybank, Newcastle, Staffs, ST5 0JJ for details.

■ Spectrum tapes. *Hobbit* with book for *Quill* or *HURG*, originals only. 16/48 tape magazine, 3 issues for *Chuckie Egg*. Phone Worcester 29206.

■ *TLL, Codename Mat, Fighter Pilot, Chequered Flag, Scuba Dive, Ad Astra, Hunchback, Eskimo Eddie, Fred, PSSST, Android Two, Alchemist, Penetrator* and others. Swop for Interface 2. Tel. 0326 290459.

■ *E.T.X., Styx, PSSST* swop for *Automania* and *3D Tank Duel*. Phone Stuart on Danbury 3303.

■ Swop *HURG* for *Supercode*. Must be original. Steve Archer, 21 Chapter Road, Strood, Rochester, Kent ME2 3PX.

■ I have software to swop. Send SAE for my list. Chris Jenkins, 48 Gadlys Street, Aberdare, Mid Glam, South Wales CF44 8BH. Games include: *Jet Set Willy, Kosmik Kanga* and more.

■ Software to swop. *Jet Set Willy, Alchemist* and other games. Write to Geoff Critchell, 40 Birstow Crescent, Leicester LE4 2JR.

■ Currah MicroSpeech, *Melbourne Draw, Scrabble*, Dk'Tronics Lightpen, *Paintbox, Atic Atac, Address Manager, Aspect 4.2 Compiler*, 5 books for Interface 1 + Microdrive with cartridge. John McNeilly, 116 Culzean Avenue, Coatbridge, Scotland ML5 5LN.

■ Spectrum Software for swop. *Mugsy, Sabre Wulf, Bugaboo* plus more. Send your list for mine: Nigel Sylvian, 62 Reedham close, Ferry Lane, London N17 9PT.

■ Would like to swop *Jet Set Willy, Atic Atac, Cookie* for *Jack and the Beanstalk, TLL, Worse Things Happen At Sea*. Phone 0642 245739 (Stephen).

■ Swop *White Lighting* for *HURG*, also *Sabre Wulf* for *Lords of Midnight*. Write to Peter Van Allen, 11a Hampton, Portesham, Dorset DT3 4EX. Tel. Portland 820982 and leave number.

■ I have *Jet Pac, Cookie, PSSST, Splat, Carnival, Chuckie Egg, J.A.T.B., Robotics, Mr Wimpy, Dragonsbane* and *Jet Set Willy*. I am open to all offers of swops. Phone 0424 215864 (Warren).

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■ Swop *Scope, Devils of the Deep, Flight Simulation*. I would like in return, *Trashman, Doomsday Castle, Codename Mat*. Also *Scuba Dive* for swop. Phone 0909 474448, ask for Andrew.

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■ Swop *Manic Miner, Blue Thunder, Combat Zone, Pool, Ant Attack, Flight Simulation* for *Full Throttle, Ad Astra, Olympics, Worse Things Happen At Sea, Automania* or *Night Gunner*. Tel. Little Chalfont 3553.

■ Will swop *Lunar Jetman, Black Crystal, Pool, Super Soccer* and *TimeGate* for *Sinclair Scrabble* only! Also have ten others to swop. Contact Keith, 11 Coniston Close, Danebank, Denton, Tameside M34 2EW.

■ Swop *Warlock of Firetop Mountain* arcade/adventure game for *Quest Adventure* or *Classic Adventure*. Phone 04946 4120 or write to Guy Walters, Egham's Farm, Knotty Green, Beaconsfield, Bucks. HP9 1XL.

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■ Swop your Spectrum originals. My list includes *Sabre Wulf, Jet Set Willy, Match Point.* Send SAE for full list to Andrew Bolsover, 298 Hastilar Road, South Sheffield S13 8EJ.

■ Will swop brand new *Psytron* for *Decathlon* (Ocean), *Stop the Express* or *Match Point.* Phone Bob on 01-892 7363

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■ I will swop *Golf, Black Hole* and *Spectral Panic* for *World Cup* or *Football Manager.* Phone 01-941 5849 after 6pm Mon-Fri. Ask for Alan.

■ PLEASE! Has anyone got *Trashman* and wants to swop it for *Pogo.* It's a very good game similar to *Q*bert.* Tel. 061-430 2495 and ask for Andrew.

■ Swop *Chuckie Egg, Pinball Wizard, Tai-Pan, Bomber Birds, Lunar Jetman, Paradroids, Death Star, Orbiter, Potty Painter, Paratrooper* for any games, assemblers or compilers. Phone Middleton-on-Sea 2128.

■ Wanted: *Valhalla, Alchemist, Trashman,* and *Death Chase* for 48K Speccy. Swop *3D Bat Attack, Alien Swarm, Bozy-Boa, Spectipede* and *3D Tunnel.* Tel. Cars Glen 713644 and ask for Mark.

WANTED

■ I need ZX81 utility programs: High Res graphics and quick save. Also ZX Printer instruction manual. D T Morrisey, 1a Ashcombe Road, Weston-Super-Mare, Avon BS23 3DS.

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■ Issue 2 of Your Spectrum (complete with Ant Attack chart). Must be in good condition. Phone Runcorn 09887 after 4.15 pm and before 6.30 pm. Ask for Ady.

■ Has anyone cracked *The Hobbit?* If so could they ring me and tell me the answers tothe riddles that Gollum asks. Thanks. Tel. 061-430 2495.

■ Wanted for experiments. Spectrum 16K or 48K. Must be cheap. Leads, PSU not essential. Write to KR Woolley, 29 Belle Vue Road, Ashbourne, Derby DE6 1AT.

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■ Help I need Issues 2 and 3 of *Your Spectrum.* Up to £1 per issue if in good condition and complete. Tel. Mr Smith 0323 897376 evenings only.

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■ Pen pal wanted. I am interested in computers. I am aged 14 and live at 5 Arno Street, Preston, Lancs PR1 3QR or phone Preston (0772) 22457 after 6 pm.

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■ Pen pal wanted to exchange ideas, software, etc, Spectrum user with Microdrive and/or Tandy CGP-115 printer preferred. I am male, about 37. Please write to Mr T D Parsons, 42 Park Leys, Harlington, Dunstable, Beds LU5 6LZ.

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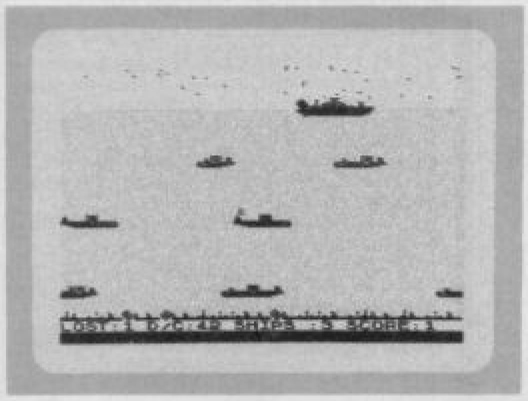
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OCEAN DEFENCE

BY DANNY SHEEHAN



Life on the ocean wave isn't all it's cracked up to be, especially with 21 enemy subs lurking around in the depths waiting to destroy your home base. Timing is the key to success — especially when trying to pick off the subs on the sea bed!

In time of war, it's not only those who rule the waves that come out on top it's also those who can rule beneath the waves as well! Mighty as your warship may look, it'll take all the skill you've got to hand to sort out the submarines skulking around underwater readying themselves to launch missiles against your home base.

The instructions for play are very simple, it's just difficult to get your timing right so that your depth charges actually hit home. Your ship moves across the top of the screen from left to right at a set speed, but you can double this speed using keys '6' to '0'. Launching a depth charge is done with keys '1' to '5'. Once you've dropped a depth charge, however, don't press the keys again until you're sure that it's a gonner as you can only have one depth charge on-screen at any one time.

The game as it stands has two levels — Cadet level provides you with 55 depth charges, and nine missiles are all that are needed to destroy your home base. Admiral level gives you 44 depth charges and here only six missiles let through your defences will finish off your base. A third or fourth level can be added to the program by altering the initial values of the number of ships (you are given three only in the game given here), depth charges (line 40), and the total number of missiles needed to destroy your home base (line 920). To make the missiles more or less frequent try altering the values in line 1615.

The program is in three parts — machine code, Basic and data for the user-defined graphics. First of all, you should enter the machine code loader program, RUN it and then delete all of the lines except for line 1. Now enter the Basic program, type RUN 7000 and enter the data given for the user-defined graphics. The program is now complete and can be SAVEd to tape by typing RUN 8000. You'll find that the finished program is saved in two parts: the Basic and machine code, followed by the data for the user-defined graphics.

```
   1 REM 012345678901234567890123456789012345
6789 (40 characters)
   5 LET b=0: REM zero checksum
  10 FOR n=23760 TO 23799
  20 READ a
  40 LET b=b+a: NEXT n
  50 IF b=5302 THEN  PRINT "MC ACCEPTED"
  60 IF b<>5302 THEN  PRINT "MC INCORRECT"
  70 DATA 06,80,05,120,254,0,32,250,201,38,10
,62,255,211,254,205,208,92,62,01,211,254,205,
208,92,37,124,254,0,32,236,201,62,30,211,254,
61,32,251,201
```

The machine code loader should be typed in first of all and RUN. Now delete lines 5-70 and enter the Basic listing; the listing can be deleted simply by typing the line numbers, ie, '5' (Enter), '10' (Enter) and so on. A checksum is included for those who are a little nervous with machine code.

```
   1 REM              P?x RETURN ?  IF <>&?>
COPY  OPEN £ RETURN  STEP  FORMAT \>? OPEN £
RETURN  STEP  FORMAT \%! RETURN ?  GO TO <>>?
 OPEN £ RETURN ■  CLS <>
```

Line 1 Once the machine code data has been entered successfully, when you LIST the program the first line should look like this.

```
  10 POKE 23658,8: GO SUB 4000
```

Line 10 Sets the Caps lock on the keyboard and GO SUBs to the routine that prints up the title page of the game's instructions on-screen.

```
  20 REM  NEW GAME SET UP
  30 LET ST=0: LET SU=0: LET MM=0: LET DC=0:
LET MD=0
  40 LET DD=44+(11 AND SK=2): LET SS=3: LET S
1=0: LET S=0
  50 REM  RESET 1
  60 DIM A$(3,32): LET ST=ST+1: LET PP=0: IF
RND>.5 THEN  LET PP=5
  70 LET A$(1)="      hij        h■ij        hb
ij "
  80 LET A$(2)="       k■i■m           k■i■m
 "
  90 LET A$(3)="        h■i■j              h■bij
 "
 130 REM  RESET 2
 140 BRIGHT 1: PAPER 1: INK 7: BORDER 0: CLS
 150 FOR N=0 TO 3: PRINT AT N,0; PAPER PP;"
                                  ": NEXT N
 160 IF PP=0 THEN  FOR N=0 TO 40: LET Y=INT (
RND*24)+151: LET X=INT (RND*255): PLOT X,Y: N
EXT N
 170 LET X=5: LET Y=0: LET M=0: LET P=-1: LET
 D=0: LET B=1
 180 PRINT AT 21,0; INK 6;"aeddeqeepeeadddeeq
edddedaeeaedde"
 190 GO SUB 900: LET L=INT (RND*5)+15
 200 PRINT £1;AT 1,0; PAPER 2;D$
```

Lines 20-200 Set up the main variables for a new game (lines 20-40), for a new level (lines 60-90) and for when one of your ships is lost (lines 130-200).

```
 600 REM MAIN LOOP
 690 LET A$(1)=A$(1,2 TO )+A$(1,1)
 700 LET A$(2)=A$(2,32)+A$(2, TO 31)
 710 LET A$(3)=A$(3,2 TO )+A$(3,1)
 720 PRINT AT 8,0; INK 7;A$(1);AT 13,0; INK (
ST+1);A$(2);AT L,0; INK (ST+2);A$(3)
 730 GO SUB 800
 740 IF IN (63486)<>255 THEN  GO SUB 1000: RE
M change 255 to 191 if you have an issue 3 sp
eccy
 750 IF M=0 THEN  GO SUB 1600
 760 IF M=1 THEN  GO SUB 1700
 770 IF D=1 THEN  GO SUB 1100
 780 IF IN (61438)<>255 THEN  GO SUB 800: REM
 change 255 to 191 if you have an issue 3 spe
ccy
 790 GO TO 300
```

Lines 600-790 The main program loop. This prints the submarines and your ship on-screen and calls the necessary subroutines required from the rest of the program to move them. Lines 690-710 move the submarines left and right.

```
 800 REM PRINT SHIP
 810 PRINT AT 3,B; PAPER PP; INK 3;(" q" AND
DD<>0);("  " AND DD=0); INK 0+(7 AND PP=0);"a
bcde";AT 4,B; INK 2; PAPER 1;" f■■■■g": LET B
=B+1
 820 IF B=26 THEN  PRINT AT 3,B; PAPER PP;"
    ";AT 4,B; PAPER 1;"        ": LET B=0
 830 RETURN
```

Lines 800-830 This subroutine prints the ship — if double speed is required, it's called twice.

```
 900 REM PRINT SCORES ETC
 910 PRINT £1;AT 0,0; INK 6; PAPER 0;"LOST:";
MM;" D/C:";DD;" SHIPS :";SS;" SCORE:";S;" "
```

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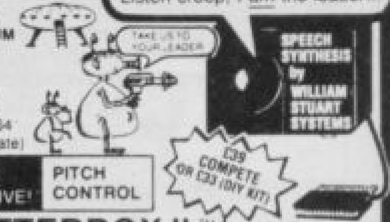
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```
 920 IF MM=(SK+1)*3 THEN  LET M$=" HOME BASE
DESTROYED ": GO TO 2140
 930 RETURN
```

Lines 900-930 Prints the necessary scoring information on-screen, such as the number of missiles exploded (lost) and how many depth charges you've left on-board.

```
1000 REM CHARGE SET UP
1010 IF DD=0 THEN  RETURN
1020 LET D=1: LET DD=DD-1: LET DC=DC+1: BEEP
.01,20: IF D=1 THEN  PRINT AT X,Y;" "
1030 PRINT AT 3,B; PAPER PP;" ";AT 2,B-1; INK
 3;"q": BEEP .01,25: PRINT AT 2,B-1; PAPER PP
;" ";AT 3,B-2; INK 3;"p";AT 3,B-2;" "
1040 GO SUB 900: LET X=4: LET Y=B-1: RETURN
```

Lines 1000-1040 Set up the position of each drop of a depth charge.

```
1100 REM PRINT CHARGE
1110 PRINT AT X,Y;" ": BEEP .009,-X: IF P=1 T
HEN  LET X=X+1
1120 IF X=20 THEN  BEEP .1,-40: LET D=0: RETU
RN
1130 IF SCREEN$ (X,Y)<>" " THEN  GO TO 1500
1150 PRINT AT X,Y; INK 3;("q" AND P=-1);("p"
AND P=1)
1160 LET P=-P: RETURN
```

Lines 1100-1160 Print the falling depth charge and check for contact (a hit) with a submarine using the SCREEN$ function.

```
1400 REM MISSILE DESTROYED
1420 LET MD=MD+1: LET S=S+3
1450 FOR N=7 TO 1 STEP -1: PRINT AT X1,Y1; PA
PER 1; INK N;"1";AT X1+1,Y1;"1";AT X1+2,Y1;"1
": BEEP .02,0: NEXT N
1460 PRINT AT X1,Y1;" ";AT X1+1,Y1;" ";AT X1+
2,Y1;" ": LET D=0: LET M=0
1470 GO SUB 900: RETURN
```

Lines 1400-1470 This routine is called when a depth charge has hit one of the missiles fired by a submarine.

```
1500 IF ATTR (X,Y)=78 THEN  GO TO 1400
1505 REM SUB DESTROYED
1510 LET OV=0: LET D=0: LET SU=SU+1: BEEP .1,
40:
1520 LET H=Y-5: LET J=Y+5: IF H<1 THEN  LET O
V=1: LET H=1
1530 LET XX=1+(1 AND X=13)+(2 AND X=L): LET A
$(XX,H TO J)="           ": IF OV=1 THEN  LET A$(X
X,30 TO 32)="   "
1540 PRINT AT X,Y-1; BRIGHT 1; FLASH 1; INK 2
: PAPER 6;"111"
1550 LET S=S+(1 AND X=8)+(2 AND X=13)+(3 AND
X=L)
1560 LET S1=S1+1: IF S1=ST*7 THEN  GO TO 2000
1570 GO SUB 900: RETURN
```

Lines 1500-1570 This routine is called when one of your depth charges has successfully hit one of the submarines. Line 1530 blanks out the submarine from the relevant string array.

```
1600 REM POSSIBLE LAUNCH ?
1610 LET T=INT (RND*2): LET X1=0+(13 AND T=0)
+(L AND T=1): LET Y1=INT (RND*24)+1
1615 LET R=RND: IF R<0+(.66 AND SK=1)+(.83 AN
D SK=2) THEN  RETURN
1620 IF SCREEN$ (X1,Y1)=" " OR X1=0 THEN  RET
URN
1630 LET C=1: LET X1=X1-2
1640 PRINT AT X1+1,Y1; INK 6;"n": BEEP .08,-2
0: PRINT AT X1,Y1; INK 6;"n";AT X1+1,Y1;"o"
1650 LET M=1: LET X1=X1-1
```

Lines 1600-1650 Check to see if a missile will be fired from one of the submarines.

```
1700 REM PRINT MISSILE
1705 PRINT AT X1+2,Y1; PAPER C;" ": LET X1=X1
-.5
1710 IF X1=3 THEN  GO TO 1800
1720 IF X1<=-1 THEN  GO TO 1900
1730 PRINT AT X1,Y1; INK 6; PAPER C;"n";AT X1
+1,Y1;"o";AT X1+2,Y1; INK 2;"1"
1740 RETURN
```

Lines 1700-1740 Print the missile being fired from a submarine on its upward path towards your ship.

```
1800 REM MISSILE BREAKS SURFACE
1810 IF Y1>=B-1 AND Y1<B+6 THEN  GO TO 2100
1820 PRINT AT X1,Y1; PAPER PP; INK 6;"n";AT X
1+1,Y1; INK 6; PAPER 1;"o";AT X1+2,Y1; INK 2;
"1"
1830 LET X1=X1-1: PRINT AT X1+3,Y1;" ";AT X1+
2,Y1;" ";AT X1,Y1; INK 6; PAPER PP;"n";AT X1+
1,Y1;"o"
1840 LET X1=X1-1: LET C=PP: RETURN
```

Lines 1800-1840 Alter the PAPER colour of the missile when it breaks the surface of the water.

```
1900 REM MISSILE ESCAPES
1910 LET MM=MM+1: GO SUB 900
1920 PRINT AT X1+1,Y1; PAPER PP;" ": LET M=0:
 RETURN
```

Lines 1900-1920 This routine checks to see if one of the missiles has escaped the ship's detection, and if so determines that it has hit your home base.

```
2000 REM STAGE COMPLETED
2010 FOR N=6 TO 1 STEP -1: FOR P=0 TO 20: RAN
DOMIZE USR 23769: POKE 23779,N: NEXT P: NEXT
N
2020 IF ST=3 THEN  LET M$="MISSION COMPLETED"
: LET S=S+50: GO TO 3000
2030 BORDER 0: CLS : GO TO 50
```

Lines 2000-2030 Should you complete your mission, you are told so on-screen and line 2010 uses machine code to produce a flashy screen display to emphasise your success.

```
2100 REM SHIP DESTROYED
2110 LET MD=MD+1: LET S=S+3
2120 POKE 23779,1: FOR N=1 TO 60: RANDOMIZE U
SR 23769: NEXT N: BORDER 0: LET SS=SS-1: IF S
S=0 THEN  GO TO 3000
2130 GO TO 130
2140 PRINT AT 1,5; FLASH 1;M$: FOR N=0 TO 250
: RANDOMIZE USR 23792: NEXT N
```

Lines 2100-2140 This routine determines what happens when one of your ships is destroyed by one of the submarine's missiles. Again, machine code is employed to liven things up a little.

```
3000 REM END OF GAME PRINT OUT
3040 BRIGHT 0: PAPER 1: INK 0: BORDER 0: CLS
: PRINT AT 0,0; INK 6; PAPER 2;D$
3050 PRINT AT 3,3; PAPER 6; INK 0;"  MISSION
OVER -";(" CADET   " AND SK=2);(" ADMIRAL " AN
D SK=1)
3060 PRINT AT 5,1; PAPER 7; INK 0;"   SUBS
 DEST   LOST   D/C  "
3065 PAPER 7: FOR N=7 TO 17: PRINT AT N,1; PA
PER 7;"                              ": NEXT
N
3070 LET X=0: LET Y=1
3080 FOR N=7 TO 17: IF X=SU THEN  GO TO 3110
3090 PRINT AT N,Y; INK 2;"k■im": LET X=X+1
3100 NEXT N: LET Y=Y+5: GO TO 3080
3110 LET X=0: LET Y=12
3120 FOR N=7 TO 15 STEP 2: IF X=MD THEN  GO T
O 3160
3130 PRINT AT N,Y; INK 2;"n";AT N+1,Y;"o": LE
T X=X+1
3140 NEXT N: LET Y=Y+1: GO TO 3120
3150 LET X=X+2: GO TO 3120
3160 LET X=0: LET Y=19
3170 FOR N=7 TO 15 STEP 2: IF X=MM THEN  GO T
O 3200
3180 PRINT AT N,Y; INK 4;"n";AT N+1,Y;"o": LE
T X=X+1
3190 NEXT N: LET Y=Y+1: GO TO 3170
3200 LET X=0: LET Y=26
3210 FOR N=7 TO 17: IF X=DC THEN  GO TO 3240
3220 PRINT AT N,Y; INK 3;"q": LET X=X+1
3230 NEXT N: LET Y=Y+1: GO TO 3210
3240 LET K1=S*0.267: LET O=(DC-(SU+MD))/(SU+M
D)^.5: LET K2=(20-(O*3)): LET K3=(20-MM): LET
 K4=(ST*6)
3250 LET K=INT (K1+K2+K3+K4)
```

```
3260 PRINT AT 19,0; PAPER 6;"    SCORE :
RATING :     %    "
3270 PRINT AT 19,11; FLASH 1;S;AT 19,25;K
3290 PRINT £1;"        MISSION :"; PAPER 2; FLAS
H 1;("UN" AND SU<=20);"SUCCESSFUL"
3300 PAUSE 0: RUN
```

Lines 3000-3300 This routine prints the 'end of game' table giving the player full details of the mission. The actual percentage score is calculated from several factors: score (40%), hit/miss ratio (20%), how many missiles hit your home base (20%) and how far you progressed with the game (20%). Line 3290 prints up whether the mission was successful overall or not.

```
4000 REM  TITLE SCREEN
4010 BRIGHT 0: PAPER 0: BORDER 1: INK 5: CLS
4020 LET D$="           OCEAN DEFENCE
"
4030 PRINT AT 0,0; PAPER 0; INK 7; FLASH 1;D$
4040 PRINT AT 3,3;"Destroy the marauding subs
     with Depth Charges, while       defendi
ng your Home Base          from the Missiles th
ey              launch...!"
4050 PRINT AT 10,2;"D/Charges.......Top Row/L
eft"
4060 PRINT AT 12,2;"Extra Knots....Top Row/Ri
ght"
4070 PRINT AT 21,0; PAPER 7; INK 0;"      Writ
ten by D.Sheehan          "
4080 PRINT AT 16,3;"  Select Difficulty...   "
4090 PRINT : PRINT "   1)  Admiral of the Fle
et"
4100 PRINT "   2)      Sea Cadet     "
4110 BEEP .1,35: PAUSE 55
4120 LET SK=0+(1 AND INKEY$="1")+(2 AND INKEY
$="2")
4130 IF SK<>0 THEN  RETURN
4140 FOR N=35 TO 34.45 STEP -.02: BEEP .02,N:
 NEXT N
4150 PAUSE 35: GO TO 4110
```

Lines 4000-4150 This routine prints up the title page on-screen and asks you to select which of the two skill levels you require. You'll also be treated to a tune of sorts while the Spectrum awaits your decision.

```
7000 REM GRAPHICS ENTRY
7005 LET B=65:    REM CODE "A"
7010 LET N=(B*8)+64848
7020 PRINT  INVERSE 1;"GRAPHIC ";CHR$ B: PRIN
T
7030 FOR M=0 TO 7
7040 INPUT A: PRINT A
7050 POKE N+M,A
7060 NEXT M: BEEP .1,10: PRINT : LET B=B+1
7070 LET N=N+8: GO TO 7020
```

Lines 7000-7070 This routine allows the data for the user-defined graphics to be entered. Change the value of B in line 7005 if you want to edit the machine code given in any way.

```
8000 REM SAVE ROUTINE
8010 SAVE "OCEAN DEF" LINE 8040
8020 SAVE "GRAPHICS"CODE USR "A",17*8
8030 VERIFY "": VERIFY ""CODE
8035 STOP
8040 LOAD ""CODE : RUN
```

Lines 8000-8040 This routine is given to allow the user-defined graphics data to be loaded in after the Basic program.

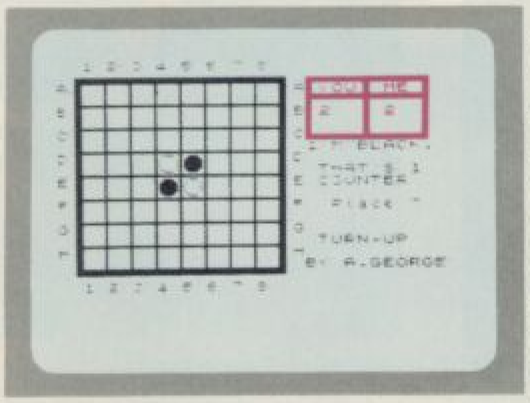
A	0	8	8	8	8	60	255	255
B	7	3	3	63	255	255	255	255
C	224	128	192	252	214	255	255	255
D	0	0	1	1	0	49	255	255
E	0	0	0	192	128	224	255	255
F	255	127	31	5	12	0	0	0
G	254	252	248	192	0	0	0	0
H	0	0	7	2	127	227	255	127

I	127	93	93	93	227	255	255	255
J	0	28	28	28	255	255	240	0
K	0	112	112	112	255	255	15	0
L	0	74	44	116	46	52	82	0
M	0	0	0	0	240	24	248	240
N	0	0	0	8	28	28	28	62
O	28	28	28	28	119	20	28	42
P	0	12	22	59	93	110	52	24
Q	0	48	104	220	186	118	44	24

Once the machine code loader and the full Basic program have been entered successfully, type RUN 7000. You must now enter the user-defined graphics data as given. Once done, type RUN 8000 and the whole program will be SAVEd to tape in two parts: the Basic and machine code, and the data for the user-defined graphics.

TURN UP

BY ADRIAN GEORGE



The playing grid is displayed on the left-hand side of the screen, with the letters and numbers along the sides to allow you to identify each square by its co-ordinates. The box in the top right-hand corner shows how many black and white counters are currently on-screen, giving you some idea of how you're doing.

Similar to the famous board game Othello ©, this program allows you to indulge in an amazing battle of wits with your Spectrum — and an extremely worthy opponent it makes too!

If you don't know the rules of the game don't panic, a brief resumé of the instructions for play follow. However, the only way you'll pick up the tactics of the game is by playing it ... and don't worry too much about making invalid moves because your opponent won't let you, as the program is very well error-trapped.

The game is played on an eight-by-eight grid with each square allotted a co-ordinate defined by a letter (A to H) and a number (1 to 8); these are displayed at the sides of the grid. Play starts with two counters from each side (black counters belong to your opponent, the white ones are yours) placed diagonally in the centre of the grid. You can choose to go first if you want, and play begins by selecting a square's co-ordinates (letter first, then number) and if valid, you will be told how many of the Spectrum's counters you have 'captured' and asked if you still want to make the move. Answer 'Y' if it's OK; entering 'N' will give you the chance of making another move.

The only valid moves are those that allow you to 'capture' a number of your opponent's counters. This is done by trapping one of your opponent's counters between two of your's in a straight line, be it horizontal, vertical or diagonal. Once you've trapped some counters, these are automatically converted to white pieces and it's the turn of the computer to try and capture some of your pieces. The game continues until every space on the grid has been taken or neither side can make a valid move. The winner is the one with the most counters still remaining on the board.

Tactics are both complicated and difficult to explain; the best way of finding these out are to play a few games, lose gracefully and then get down to business. However, try and place your white pieces in the corners of the grid (which gives you control over the diagonals) and on the sides.

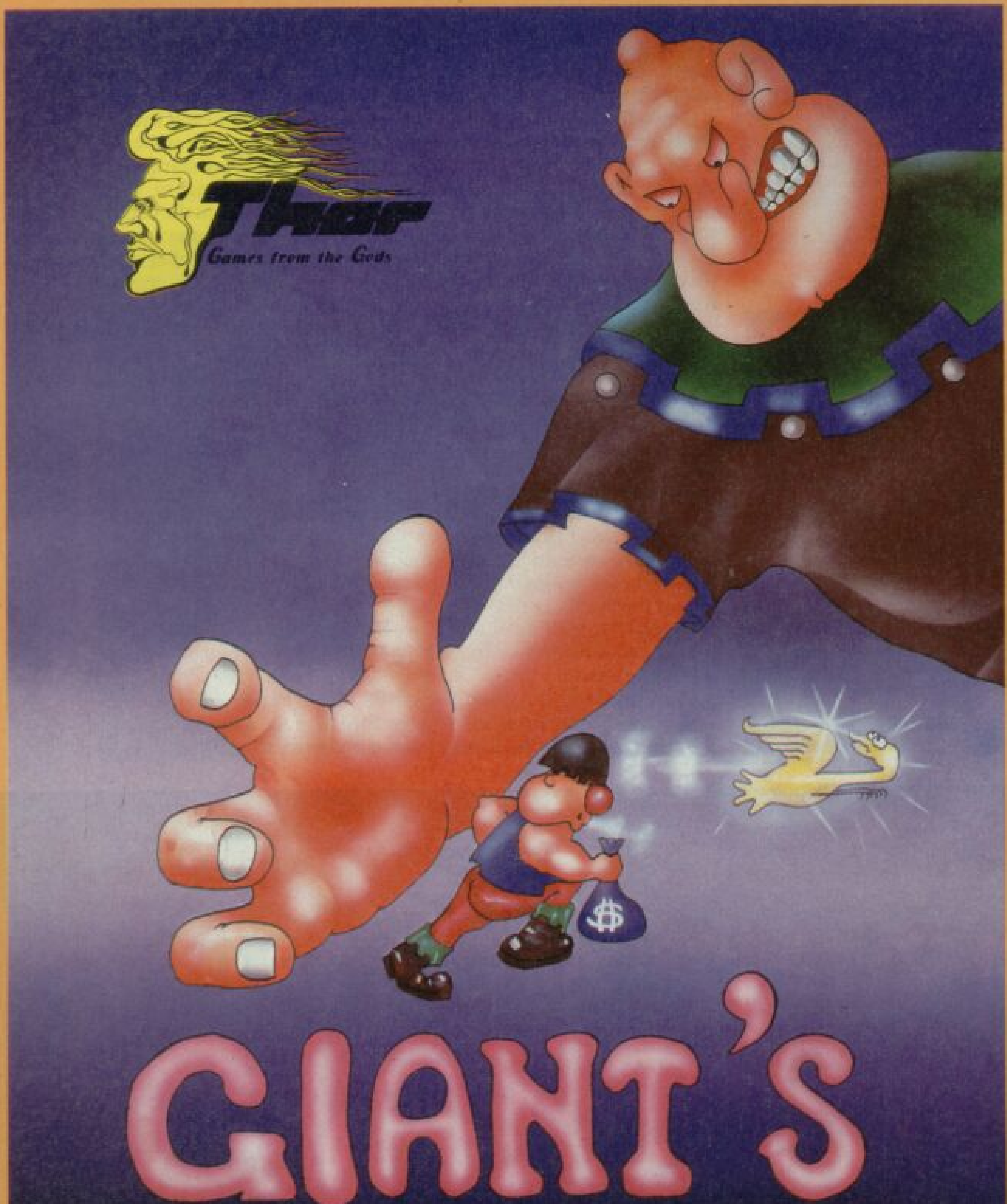
At the start of the game, the grid is printed up on-screen and a prompt will come up when it's your turn to make a move. Type up the co-ordinates of the square you wish to move to and press Enter.



HERE WE GO AGAIN

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If you enter an invalid move, you will be asked to have another go. Once a valid move is made, the computer will tell you how you stand to gain from the move and ask if you still want to go through with your decision. If you press 'Y', your move is made and the relevant counters are altered. The Spectrum will now think out which is the best move to make and once done, tells you its your go again. If at any time you can't make a valid move, press the 'M' key and your turn will be missed out.

Check out lines 160-320 if you want to see how I've made the computer think for itself — I'm not sure it's the best way to do this, but you'll find the program's certainly hard to beat. However, I've only made the program check for one move ahead — so seasoned games players (and anyone else keen to exploit the program) are welcome to allow the Spectrum to look a few more moves ahead and thus make the program much harder to beat. It should be possible to make the Spectrum so good at the game that it never loses, but that doesn't seem all that much fun!

```
  10 REM TURN-UP
  11 PAPER 7: INK 0: BORDER 7: CLS
  15 INK 0: CLS
  20 GO SUB 9500
```

Lines 10-20 Set the black INK and jump to subroutine which draws the screen display.

```
  30 PRINT AT 21,3; INK 1;"You go first"
  35 INK 2: LET k=21: LET m$=""
  40 PRINT AT 9,k; FLASH 1;"█"
  50 IF INKEY$="" THEN  BEEP 0.01,20: GO TO 5
0
  52 PRINT AT 21,3;"                    "
  55 IF INKEY$="m" THEN  GO TO 160
  60 LET i$=INKEY$: IF CODE i$>96 AND CODE i$
<105 AND k=21 THEN  PRINT AT 9,k;CHR$ (CODE i
$-32): LET k=22: LET m$=m$+i$: BEEP 0.05,0: G
O TO 40
  70 LET i$=INKEY$: IF CODE i$>48 AND CODE i$
<57 AND k=22 THEN  PRINT AT 9,22;i$: LET k=23
: LET m$=m$+i$: BEEP 0.05,0: GO TO 40
  80 LET i$=INKEY$: IF CODE i$=12 AND k>21 TH
EN  LET k=k-1: PRINT AT 9,k+1;" ": LET m$=m$(
1 TO (LEN m$-1)): BEEP 0.05,0: GO TO 40
  90 IF CODE INKEY$=13 AND k=23 THEN  PRINT A
T 9,23;" ": BEEP 0.05,0: GO TO 110
 100 GO TO 40
 110 INK 0: BEEP .4,20: PRINT AT 9,21;"   ":
IF LEN m$<>2 THEN  GO TO 35
 120 LET x=CODE m$(1)-96: LET y=VAL m$(2): LE
T p$="w"
```

Lines 30-120 This routine allows the player to input a move on-screen. Line 50 produces a BEEP — a noisy reminder that it's still your turn to input a move. Checks are made so that the first character you enter can only be a letter between 'A' and 'H' or an 'M' for a missed go. A check is also made to make sure the second character you enter is a number between one and eight.

```
 130 GO SUB 9000: IF v$="nok" THEN  PRINT AT
10,21;"INVALID";AT 11,22;"MOVE": BEEP 1,0: PR
INT AT 10,21;"          ";AT 11,22;"    ": GO TO
 35
 131 GO SUB 6000: PRINT AT 9,21;"THAT'S ";np;
AT 10,21;"COUNTER": IF np>1 THEN  PRINT AT 10
,28;"S"
 132 PRINT AT 12,22;"Place ?"
 133 IF INKEY$="y" THEN  PRINT AT 9,21;"
    ";AT 10,21;"            ";AT 12,21;"
   ": GO TO 140
 134 IF INKEY$="n" THEN  PRINT AT 9,21;"
    ";AT 10,21;"            ";AT 12,21;"
    ": GO TO 35
 135 BEEP 0.01,0: GO TO 133
 140 IF v$="ok" THEN  PRINT AT x*2,y*2;"ef";A
T x*2+1,y*2;"gh"
 150 GO SUB 8000: PRINT AT 4,21; INK 4;"    █
   ": PRINT AT 4,21; INK 4;you;AT 4,26;me: IF
 you+me=64 THEN  GO TO 7000
```

Lines 130-150 This area of the program GO SUBs to line 9000 — the routine to check that the move is valid; if the move is invalid, you will be told so on-screen. If the move turns out to be OK, the program GO SUBs to line 6000 to a routine which counts how many counters will be taken if the move is made. You are then asked if you still want to make the move. Pressing the 'N' key will give you the chance of another choice, and the 'Y' key moves the program on to line 8000 — the routine to flip over the required counters and update the score.

```
 160 INK 0
 198 LET point=32000
 199 LET no=0
 200 FOR x=1 TO 8: FOR y=1 TO 8: LET p$="b":
BEEP 0.001,x*8+y-8
 210 GO SUB 9000: IF v$="nok" THEN  GO TO 260
 215 BEEP 0.004,65
 220 GO SUB 6000: IF (x=1 OR x=8) AND (y=1 OR
 y=8) THEN  LET np=np+4: GO TO 230
```

Lines 160-220 The first of the routines that allow the Spectrum to make its move. To begin with, it looks at each square to check whether it's a valid move or not (line 9000) and then counts how many counters would be taken (line 6000).

```
 224 IF (x=2 OR x=7) AND (y=2 OR y=7) THEN  L
ET np=np-1
 225 IF x=1 OR x=8 OR y=1 OR y=8 THEN  LET np
=np+2
 226 IF (x=1 OR x=8) AND (y=2 OR y=7) THEN  L
ET np=np-3
 227 IF (y=1 OR y=8) AND (x=2 OR x=7) THEN  L
ET np=np-3
```

Lines 224-227 Once the valid moves have been checked out, the program here decides which is the most strategic position for its next move; corner and side squares are obviously worth more than those elsewhere.

```
 230 IF np<no THEN  GO TO 260
 240 IF np=no THEN  POKE point,x: POKE point+
1,y: LET point=point+2: GO TO 260
 250 FOR n=32000 TO point: POKE n,0: NEXT n:
LET point=32000
 251 LET no=np: POKE point,x: POKE point+1,y:
 LET point=point+2
 260 NEXT y: NEXT x
```

Lines 230-260 This routine examines each square, and if the 'position' value is more than or equal to the number of counters that can be taken, its co-ordinates are added to a list of possible moves.

```
 270 LET rn=(point-32000)/2: LET r=INT (RND*r
n)
 280 LET r=r*2+32000: IF rn=0 THEN  PRINT AT
8,21;"I CAN'T GO": BEEP 1,0: PRINT AT 8,21;"
          ": GO TO 35
 290 LET x=PEEK r: LET y=PEEK (r+1)
 300 GO SUB 8000: BEEP 0.05,20
 310 PRINT AT 4,21; INK 4;"    █    ": PRINT A
T 4,21; INK 4;you;AT 4,26;me: IF you+me=64 TH
EN  GO TO 7000
 320 GO TO 35
```

Lines 270-320 A square is chosen at random from the list of the best possible moves. If the routine hasn't found any suitable moves, the Spectrum announces the fact that it can't go.

```
6000 LET np=0
6010 FOR f=-1 TO 1: FOR g=-1 TO 1: IF f=0 AND
 g=0 THEN  GO TO 6090
6020 LET np1=0
6030 IF b$(x+f+1,y+g+1)=" " THEN  GO TO 6090
6040 IF b$(x+f+1,y+g+1)=p$ THEN  GO TO 6090
6050 LET h1=x+f+1: LET h2=y+g+1
6060 IF b$(h1,h2)=" " THEN  GO TO 6090
6070 IF b$(h1,h2)=p$ THEN  LET np=np+np1: GO
TO 6090
6080 LET h1=h1+f: LET h2=h2+g: LET np1=np1+1:
 GO TO 6060
6090 NEXT g: NEXT f
6100 RETURN
```

Lines 6000-6100 This routine works out the number of counters which will be taken if a certain move is made. The array, b$, stores the board positions.

```
7000 INK 3: REM END
7010 FOR n=-10 TO 20 STEP 5
7020 FOR s=0 TO 10 STEP 2
7030 BORDER INT (RND*8): BEEP 0.01,n+s
7040 NEXT s: NEXT n
7050 IF you=me THEN  PRINT AT 21,1; FLASH 1;"
A DRAW"
7060 IF you>me THEN  PRINT AT 21,1; FLASH 1;"
YOU WIN"
7070 IF me>you THEN  PRINT AT 21,1; FLASH 1;"
I WIN!!!!!!!!"
```

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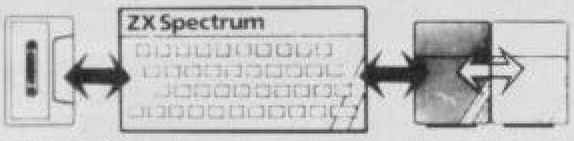
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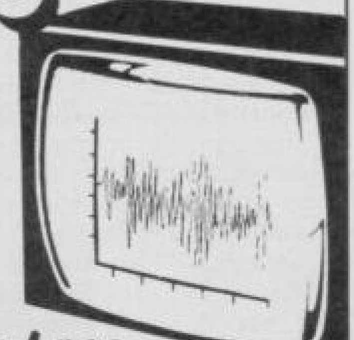
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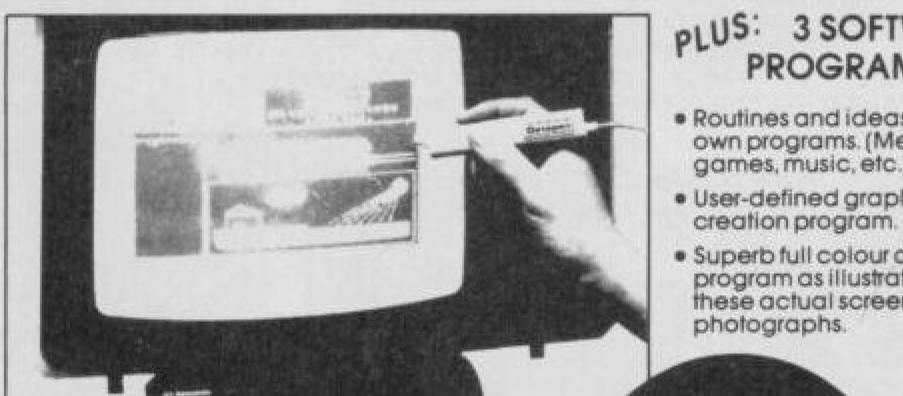
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or ask at your local computer shop. Send S.A.E. for details.

Lightpens and software are also available for BBC B, Dragon, CBM-64 and VIC-20.

Lines 7000-7070 This part of the program produces a flashy border to the screen, and prints the result of the game — either a win for the player, a draw or, in the case of the Spectrum winning, a typically arrogant announcement guaranteed to get you demanding another game.

```
7080 INPUT "ANOTHER GAME ? "; LINE j$
7090 IF j$(1)="y" OR j$(1)="Y" THEN  PRINT AT
 2,1;"                    ": INK 0: GO TO 10
7100 GO TO 9999
```

Lines 7080-7100 Ask if you would like to have another game.

```
8000 LET x$="ef": LET y$="gh": LET q=you: LET
 q1=me: IF p$="b" THEN  LET q=me: LET q1=you
8010 IF p$="b" THEN  LET x$="ij": LET y$="kl"
8020 PRINT AT x*2,y*2;x$;AT x*2+1,y*2;y$: LET
 b$(x+1,y+1)=p$
8030 LET q=q+1
8040 FOR f=-1 TO 1: FOR g=-1 TO 1: BEEP 0.005
,60
8050 IF f=0 AND g=0 THEN  GO TO 8180
8060 IF b$(x+f+1,y+g+1)=" " THEN  GO TO 8180
8070 IF b$(x+f+1,y+g+1)=p$ THEN  GO TO 8180
8080 LET h1=x+f+1: LET h2=y+g+1
8090 IF b$(h1,h2)=" " THEN  GO TO 8180
8100 IF b$(h1,h2)<>p$ THEN  LET h1=h1+f: LET
h2=h2+g: GO TO 8090
8110 REM CHANGE
8120 LET h1=x+f+1: LET h2=y+g+1
8130 IF b$(h1,h2)=p$ THEN  GO TO 8180
8140 LET q=q+1: LET q1=q1-1
8150 LET b$(h1,h2)=p$
8160 BEEP 0.01,20: PRINT AT (h1-1)*2,(h2-1)*2
;x$;AT h1*2-1,(h2-1)*2;y$
8170 LET h1=h1+f: LET h2=h2+g: GO TO 8130
8180 NEXT g: NEXT f
8190 LET me=q: LET you=q1
8200 IF p$="w" THEN  LET me=q1: LET you=q
8210 RETURN
```

Lines 8000-8210 Make the moves happen on-screen, ie, the relevant counters are flipped over when required. Lines 8190 and 8200 update the score once a move has been completed.

```
9000 IF b$(x+1,y+1)<>" " THEN  LET v$="nok":
RETURN
9010 FOR f=-1 TO 1: FOR g=-1 TO 1: IF f=0 AND
g=0 THEN  GO TO 9090
9020 IF b$(x+f+1,y+g+1)=" " THEN  GO TO 9090
9030 IF b$(x+f+1,y+g+1)=p$ THEN  GO TO 9090
9040 LET h1=x+1+f: LET h2=y+1+g
9050 LET h1=h1+f: LET h2=h2+g
9060 IF b$(h1,h2)=" " THEN  GO TO 9090
9070 IF b$(h1,h2)<>p$ THEN  GO TO 9050
9080 LET v$="ok": RETURN
9090 NEXT g: NEXT f
9100 LET v$="nok": RETURN
```

Lines 9000-9100 This routine checks if the square you wish to move to is valid within the rules of the game. Line 9000 checks to see if the square is already occupied, and lines 9010-9070 check that at least one of the opposition's counters is taken in the move.

```
9500 RESTORE : PRINT AT 0,2;"1 2 3 4 5 6 7 8"
;AT 1,1;"▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄": INK 4;" ▄▄▄▄▄▄▄
▄▄▄"
9504 GO SUB 9590
9505 INK 4: PRINT AT 2,20;"▌YOU▌ ME ▌";AT 3,2
0;"▛▀▀▀▜▀▀▀▀▜";AT 4,20;"▌2  ▌ 2  ▌";AT 5,20;"
▌    ▌    ▌";AT 6,20;"▙▄▄▄▟▄▄▄▄▟"
9510 INK 0: PRINT AT 1,0
9520 FOR n=65 TO 72: BEEP 0.01,n-40: PRINT CH
R$ n;"▌abababababababab▌";CHR$ n: PRINT " ▌cd
cdcdcdcdcdcdcd▌": NEXT n
9530 PRINT AT 18,1;"▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀";AT 19
,2;"1 2 3 4 5 6 7 8"
9540 PRINT AT 8,8;"efij";AT 9,8;"ghkl";AT 10,
8;"ijef";AT 11,8;"klgh"
9550 DIM b$(10,10): FOR n=1 TO 10: LET b$(n)=
"          ": NEXT n
9560 LET b$(5,5)="w": LET b$(6,5)="b": LET b$
(5,6)="b": LET b$(6,6)="w"
9570 LET you=2: LET me=2
9580 PRINT AT 7,20;"I'M BLACK."
9585 RETURN
```

Lines 9500-9585 Print up the playing area on-screen.

```
9590 INK 5: FOR n=USR "a" TO USR "l"+7: READ
a: POKE n,a: NEXT n: PRINT AT 15,21;"TURN-UP"
;AT 17,20;"BY A.GEORGE"
9600 INK 0: RETURN
```

Lines 9590-9600 Set up the user-defined graphics used in the program.

```
9610 DATA 255,128,a,a,a,a,a,a,255,1,1,1,1,1,1
,1
9620 DATA 128,a,a,a,a,a,a,255,1,1,1,1,1,1,1,2
55
9630 DATA 255,128,135,136,144,160,a,a,255,1,2
25,17,9,5,5,5
9640 DATA 160,a,a,144,136,135,128,255,5,5,5,9
,17,225,1,255
9650 DATA 255,128,135,143,159,191,a,a,255,1,2
25,241,249,253,a,a
9660 DATA 191,a,a,159,143,135,128,255,253,a,a
,249,241,225,1,255
```

Lines 9610-9660 Contain the data for the user-defined graphics. YS

PROGRAMMING ON SPEC

Programs submitted for publication in *Your Spectrum* have a tendency to suffer a number of common faults — simple little quirks which can be rectified easily.

Our major gripe is that the display is often messy and untidy. A screen can be made so much more legible if it is well-formatted — if spaces are left between lines of text and words are not split from line to line. And while we're on about screens, if you display something like the current score or whatever, do remember that labelling it makes all the difference — the whole effect becomes more user-friendly (to use a rather hackneyed phrase). Other suggestions for improvements are:

1. Use the 'PRINT #1;' statement to allow you to print on the bottom two lines of the screen.
2. Use INKEY$ for simple inputs which only require a single key response.
3. Check that answers to any questions within a program are valid.
4. If long calculations are carried out within the program's operation don't let the user sit there idly twiddling thumbs, print a message such as 'please wait — I'm thinking'. Or even better, give the user something to read, such as the instructions for playing the game, while the calculation is being undertaken.
5. Write major sections of your program as subroutines, and label them with REM statements explaining what they all do. It is always useful to place a REM statement after a GO SUB call, for instance.
6. If your program is written in machine code, or contains a machine code routine, then provide a checksum for the data so that the unwary typist will realise their mistake before it's too late. An Assembly listing accompanying the code would also be useful.
7. Write your listings in as structured a form as you can manage, as this will help other programmers to improve and/or modify them.

Above all, think of all the annoying aspects of listings you've experienced in your programming career — and make sure they don't happen in your programs. That said, the standard of contributions to *Your Spectrum* have been extremely high. So, if you want to see your name *YS*, then we want to see your programs — remember, we pay better than most, but they've got to be good!

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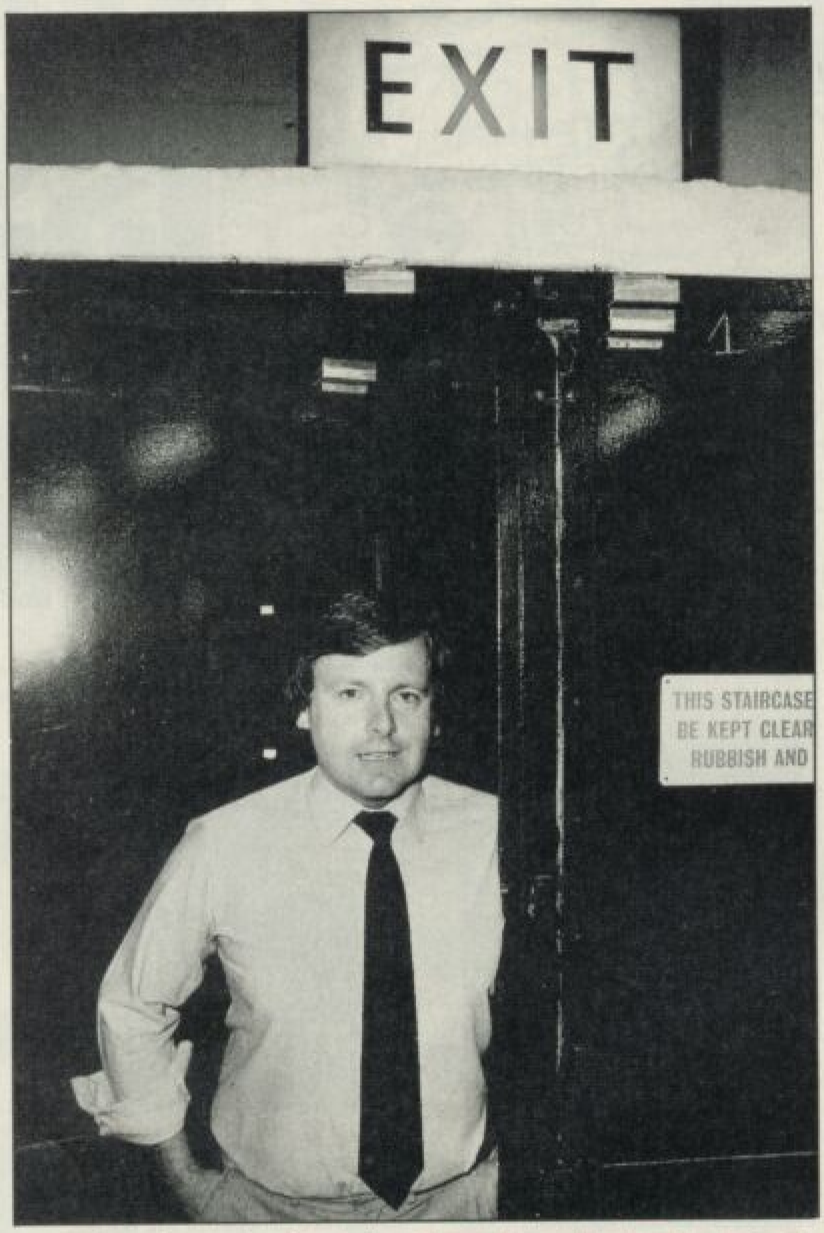


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JET SETTING

Surviving the software market is no easy ride . . . even if you do have Matthew Smith in tow.* Sue Denham *tackles* Colin Stokes *of Software Projects on topics past, present and future.



TONY SLEEP

Though not actually exhibiting at the PCW Show this year, Software Projects made its presence felt through the persistence of its self-confessed sales supremo, Colin Stokes. Seemingly at the centre of many 'hold the front page' stories over the last nine months or so, he seemed eager to talk about the exploits of SP, the trials and tribulations of his last company Imagine and, of course, their director and 'ace in the hole' Matthew Smith.

"Matthew left Bug-Byte because he became disenchanted with the company — whatever programmers feel they're worth, they rarely get it, so he decided to join us. The guy's a genius, although he doesn't think he's a megastar or anything — he's not into flashy cars or big holidays, he's just a down-to-earth bloke. Matthew's also a profit-maker and at the end of the day, that's what we're talking about.

"I'll always remember March 9th of this year — the day we released *Jet Set Willy* — we had virtually every distributor in the country waiting outside our offices in an assortment of taxis, cars and vans; they were so eager to ship the product to the shops. It was very exciting."

So how has Matthew's fame and fortune helped Software Projects? "Of course, it's been great — to the point that we must be considered one of the biggest software houses in the UK. I couldn't give you a definite figure for our sales of *JSW*, but I reckon it must be in the region of 200,000 — and we're not finished with it yet, especially as we've now cracked the Japanese market, the first UK company to do so I might add.

"There have been disadvantages as well. Programmers with a good piece of code are always phoning us up announcing that they've got the next *Manic Miner* and so on, and expecting us to give them money and fame instantly. The software business just isn't like that! There are many misconceptions about the software market, and the cost of producing the right kind of product is increasing all the time — for programmers it's getting very tough to barter their way against so much opposition. Also, because they're talking to Software Projects, they want lots more money than usual — and we just don't work that way. Just look at the way the big chains are selecting the games they choose to sell — if there are five games all purporting to be flight simulators, only two will ever get the high street exposure they'll need to become successful. Twelve months ago, the industry would be quite happy with middle-of-the-road product, but now the whole situation has been rationalised. From what I can gather, the mean average shelf life of a software package is around four weeks — and wholesalers are demanding new products all the time, backed up by a wealth of good back product. It's pretty tough out there."

Moving on to SP's brush with the Guild of Software Houses (GOSH) and their unsuccessful attempts to become part of it, Colin was most adamant on his criticism of the group. "GOSH is an achievement which has decided not to encompass the whole of the software industry. SP decided not to take advantage of GOSH, especially as they seem to hold a personal vendetta with us since a few of its members decided that we 'stole' Matthew from Bug-Byte. Anyway, the aims of GOSH seem to be totally wrong — what they should be doing is talking about reducing the discounts offered by the wholesale industry, discussing sale or return deals and *really* talking about the industry as a whole, especially the aspects of protection that we've pioneered and are striving to achieve."

Moving back in time nine months to Colin's swift departure from Imagine, where he was in charge of the sales force for over a year, it's obvious that the bitterness has not yet died down. "They bugged my phone, took conversations I'd had out of context and used them to discredit my reputation. I was even wrongly accused of stealing some of the company's tapes and had my house searched by the Fraud Squad when my wife was pregnant. As a company, Imagine was inept, unprofessional and immature. I know certain members of Imagine are setting up a new software house — they even had the nerve to ask me whether I'd like to help them — but if things work out for them, then that's fine.

"I'm happy at Software Projects — it's a good, professional outfit and, while the rest of the industry goes into decline, I see our company growing. That's not to say that I can give any guarantees of success — but then no-one can say thay have with the market in the state it's in at the moment. Although *Manic Miner* and *Jet Set Willy* were both superb and original programs, I think you have to look at Europe and the USA to see good quality programming."

As to the future of Software Projects, what will you be doing over the next few months? "Well, obviously *Manic Miner* and *Jet Set Willy* will be converted for virtually every home computer you can think of. This has been imposed on us in many ways; every software house gets lots of mail, but we get thousands of letters just asking us to put either of Matthew's 'Willy' games on to their particular machine — the object of the exercise after all is to give customers what they want."

And, of course, the inevitable question — what's Matthew up to at the moment and when is the next Jet Setting program going to be unleashed on the public. Refusing to be drawn, Colin settled for a simple reply ... "Soon". On being reminded that Christmas will soon be with is, Colin merely smiled and came back with, "*Very* soon!" YS

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